THE AMERICAN
JOURNAL OF PHARMACY.

JULY, 1878.

EPSOM SALT versus STRAWBERRIES.

By F. H. STORER, *Professor of Agricultural Chemistry in Harvard University.*

The fact that the ripe strawberry is apt to induce constipation seems to be less generally known than it should be; perhaps because the binding action would not naturally be expected, in view of the numerous small seeds of the berry, which might be supposed to promote discharges from the bowels by mere mechanical action.

In this country in particular, where an immense and well nigh universal consumption of strawberries is coincident with the setting in of hot weather, the constipating action of the berry is complicated and, as it were, increased by the excessive waste of water from the body, by perspiration, which occurs at this period; and there can be little doubt that, taking the two causes together, the strawberry season—though perhaps beneficial to some constitutions—is the occasion of much ill health among the American people.

It occurred to me some years since—at the time of Graham's definition of "colloid" and "crystalloid" bodies—that Liebig's argument, that the cathartic action of many saline medicaments is to be referred to their osmotic relations to the membranes of the intestinal canal and the blood vessels, might now be carried on a step further and be made the basis of a rational treatment of constipation.

I argued, in particular, that it might, perhaps, be an easy matter to annul the tendency to constipation which is so noticeable in the hot, dry weather of early summer, by checking or diverting the course of some part of the water which would naturally be exuded by the skin at this season, and causing it to pass into the rectum. The idea was that we might eat or drink habitually small quantities of some harmless indigestible hygroscopic colloid substance, which, while holding water forcibly, could not readily pass through the walls of the stomach or intestines by way of osmose, and would consequently arrive in the

rectum as a liquid, whose presence would hinder the contents of that receptacle from becoming hard. I have never found time to study this conception in its original simplicity, though I think it not unlikely that certain familiar remedies may be found to fall within the scope of it. For example, the use of the fleshy pulp of several fruits which are known to act as laxatives may perhaps be justly regarded as an approximation to the above-mentioned idea. It is not improbable that the pulp-like flesh of prunes and tamarinds contains an inert indigestible colloid substance, or that the advantages derived from the use of these fruits may depend upon the presence and properties of this substance. Perhaps even the sweet pulp of the cassia pods of India may be another example of the same general order.

However this may be, I have latterly had occasion to notice that the action of one, at least, of the mineral waters now in very common use is so closely analogus to that of my proposed medicament that the conception seems worthy of being kept in view, and of being subjected to the test of experiment whenever opportunity may offer.

Indeed, it may be said in general that the osmotic theory of the action of some laxative medicines is so well illustrated by the practical use of certain saline waters, that the fact is worthy of more careful attention and consideration than appears to have been given to it hitherto. The Friedrichshall bitter-water, for example, taken in doses of a small wine-glassful three or four times per day, or five or six times if need be, is an effective bar to the constipations of early summer and to those produced by strawberries; not that the saline water, when taken in the small doses just described, acts as a cathartic, properly so called, but that it carries enough water to the rectum to keep its contents soft.

Analysis[1] of the Friedrichshall water has shown that it contains a variety of salts, some of which may perhaps be useful medicaments in one case and some in another; but for the purpose now under consideration the magnesium salts, which are prominent constituents of this water, would seem to be amply sufficient. I have, in fact, prepared a solution of far less disagreeable taste than Friedrichshall water and equally effective with it against the kinds of constipation here in ques-

[1] "Jahresbericht der Chemie," 1847-48, p. 1002; from "Annalen der Chemie und Pharmacie," lxiii, 127.

tion, by simply dissolving 15 grams of Epsom salt and 8 grams of common salt in a champagne bottle (quart) full of water.[1]

In how far the presence of the common salt may be essential to the efficacy of this mixture I am not prepared to say. I added it on the conjecture that a solution containing a chloride as well as a magnesium compound might perhaps serve a better purpose than sulphate of magnesium by itself.

The common salt has at least the merit of abating or disguising to an appreciable extent the disagreeable taste[2] of the Epsom salt.

As for the mode of action of these small doses of saline matters, it would seem to admit of ready explanation on the old theory that the salts tend to detain the water in which they are held dissolved. That is to say, the salts hinder the water from passing through the walls of the intestines by way of osmose, and consequently carry into the rectum a certain amount of water, which but for the presence of the salts would naturally have been discharged through the skin. Since the magnesium salt is a crystalloid and not a colloid body, part of it undoubtedly passes into the blood, and some of it passes through the kidneys and is discharged with the urine; but a certain quantity does, nevertheless, go into the rectum, carrying with it enough water to keep the contents of that receptacle moist.

It is to be borne in mind, of course, that in using these continuous small doses of the magnesium salt we undoubtedly produce some other physiological effects which are known to attend the use of this medica-

[1] A small wine-glassful of this solution may be taken on going to bed at night, on getting up in the morning, in the middle of the afternoon, and of the forenoon also, if need be; or more frequently still, in case the foregoing doses should prove to be insufficient. Sometimes, on the other hand, a couple of doses will be all-sufficient, taken at night and morning.

It may here be said that in a preliminary trial, or mixture of 100 grams Epsom salt, 8 grams crystallized chloride of magnesium, 12 grams Glauber salt and 8 grams common salt, to the quart of water, was found to be too strong.

It is noteworthy that the solution described in the text contains a much smaller amount of saline matter than the sum of the matters contained in the Friedrichshall water, as indicated by the analysis above cited.

[2] I have noticed in several instances that the taste of the mixed solution has improved on standing; that is to say, a slight but peculiar disagreeable taste was noticeabele in the freshly prepared solutions that could not be detected in solutions that had been kept a week or more.

ment. There will be a certain amount of diuretic action, doubtless, in addition to the laxative, and perhaps some manifestation of the cooling or anti-inflammatory influence which has led, at one time and another, to the employment of Epsom salt in the treatment of fevers and inflammations. But these results are evidently of no great consequence to a healthy person. The only unpleasant doubt that suggests itself is in connection with the diuretic movement, namely, whether there may not be some danger in continually bringing into the bladder an unnaturally large quantity of magnesia, lest it should there enter into insoluble combination with the phosphates of the urine. But it is none the less true that the ability to prevent occasional constipation by means of salts so simple and so nearly harmless as the mixture here described will be of much advantage in many cases.

The salts here in question can be obtained almost everywhere, and may readily be carried about in traveling, in the form of dry powders, to be dissolved in water at the moment of use or whenever they may be needed.

Note by the Editor.—Prof. Storer's paper has recalled to our mind several cases which appear to sustain his views. In a case of external piles, well advanced in the forming stage, magnesium sulphate was selected, not so much on account of its laxative action, as rather for its well known property of absorbing and retaining water in the intestinal canal. A solution was made containing in each fluidounce half an ounce of the salt, and this was regularly taken before breakfast. The commencing dose, half a fluidounce, containing 120 grains of the salt, had to be reduced in a few days to one-half, and was during the following two or three months very gradually lessened to f℥ss, and finally discontinued, having effected a cure, or rather prevented a further enlargement of the distention. We are informed that during the twenty years which have since passed by there has been no necessity for repeating the treatment.

Another case of very recent occurrence is one of chronic constipation in an aged person, requiring the frequent use of active cathartics, and in which milder laxatives, like confection of senna, were of no avail. A similar solution of magnesium sulphate was made and taken in doses commencing with half a fluidounce. The dose was perhaps too rapidly reduced to a fluidrachm; for the latter dose soon failed to accomplish its object, and had to be increased again to a tablespoonful.

DANGEROUS HYDRARGYRUM CUM CRETA.

By Elwood G. Hendricks, Ph.G.

So much has been said and written on this subject that every pharmacist should know the danger of this preparation when not properly made, and the changes it undergoes when in contact with the atmosphere. My attention was attracted not long ago in a pharmacy to the upper shelf, where there was an array of 8 oz. salt-mouth bottles, containing various preparations, among them one containing hydrargyrum cum creta, probably about three ounces. Near the bottom I noticed a peculiar coloration, and on closely examining it observed that about one-sixth of the whole quantity in the bottle had undergone the change and formed red oxide of mercury. The proprietor had two stores, and in this one he also kept on hand a small 2 oz. bottle to supply the dispensing counter; yet serious results might happen in case a new or younger assistant should be left in charge of the store.

In speaking with a physician of Northumberland county, he informed me that he had used the preparation of mercury and chalk very often with bad results, viz., producing vomiting and gastric irritation, and very dangerous symptoms. He afterwards spoke to a neighboring physician about the preparation, and learned that he also had experienced the same results; both have not prescribed it for nine years.

A very interesting and instructive article on commercial hydrargyrum cum creta, by Prof. J. P. Remington, was published in the "Am. Jour. Phar.," 1869, p. 43, in which he speaks of Dr. Squibb's process for preparing this officinal article with honey, which prevents the oxidation of the metallic mercury, and it is to be hoped that all pharmacists will pay more attention to this valuable preparation which, through carelessness in preparing or keeping, may become such a dangerous article.

Note.—The editor agrees with Prof. Procter's opinion appended to the paper referred to, "that this preparation as made by the officinal process should be abandoned, and a new formula adopted, containing saccharine matter, as in blue mass." Mr. Bibby's process, published in this journal, 1876, p. 269, appears to be well adapted for pharmacists who prefer making their own preparations, and we invite readers who may have had practical experience with this or another reliable process, to communicate the same.

EMULSIONS.

By Ph. H. Dilg, Ph.G.

In preparing emulsions, German apothecaries generally employ the relative quantity of gum and oil officinal in the German Pharmacopœia; many differ, however, in regard to the exact proportion and time of adding the first portion of water. Some mix at once 4 parts of water, 4 of oil and 2 of gum; others first mix 4 parts of oil with 2 parts of gum, and then add 4 parts of water at once; still others follow either one of the above methods, with the exception of using only 3 instead of 4 parts of water as the first portion. I have experimented with each one and came to the conclusion that, though there is no material difference in the result, the second is the most advantageous mode. It is preferable to the first for being less liable to afford the gum, especially when in fine powder, opportunity to clog, and it is more easily manipulated than the third method, since the larger amount of water facilitates the division or spread of each particle of gum, thereby expediting the thorough combination of the mixture. After mixing intimately half as much gum as a given quantity of oil or balsam, add at once the same quantity of water as oil, and triturate until a crackling noise is produced, which indicates that the oil is thoroughly emulsionized and will bear any amount of dilution; it is one of the principal points to be observed in following the German process. As far as permanency and pure milkiness are concerned there is probably no superior emulsion made; it has, however, the decided disadvantage of requiring too much gum. Therefore, whenever a larger amount of oil is required to be emulsionized, it is advisable to use the method which has found much favor, at least among Philadelphia druggists, namely, forming a mucilage and adding oil gradually, with much less gum than is generally used. I have succeeded in making perfect emulsions, which will remain so as long as extemporaneous mixtures are generally expected to stand without separating, namely, about a week, when they will commence to separate into layers, without liberating the oil, and a slight shake will recombine them. I make a a mucilage with f℥iv water and ℥i gum and gradually (not necessarily slowly) add f℥i oil; after these are well combined enough water is added to make f℥ii, after which the mixture will bear copious dilution. It is a mistake to think that the mucilage must be *thick*, as this renders it necessary to add the oil and balance of water *alternately*. In trying

to make the same emulsion, using only f℥ii water to begin with, I have found that, before half finished, it became granulated, and required additional water to spread the gum sufficiently so as to combine smoothly with all the particles of oil. I have made emulsions of cod liver oil, copaiba, castor oil and oil of turpentine, by this method, with very satisfactory success.

MEDICATED SYRUPS.

By Isaac Davis, Ph.G.

Abstract from an Inaugural Essay presented to the Philadelphia College of Pharmacy.

The author refers to some of the disadvantages of preparing syrups by boiling, and afterwards to Mr. Orynski's process for preparing syrups without heat ("Proceedings Amer. Phar. Assoc.," 1871, p. 451). *Simple syrup* was prepared by placing 36 troyounces of granulated sugar in a conical glass percolator upon a perforated diaphragm covered with a piece of linen, and gradually pouring distilled water upon it until the sugar was dissolved and the syrup measured 44 fluidounces. The result was quite satisfactory; however, the application of the same process in the preparation of other syrups was not equal in its results to those obtained with the following process:

Syrupus scillæ, made by the officinal process, becomes cloudy and separates a flocculent albuminous matter, but a permanently clear and transparent syrup is obtained by making a mixture of 2 fluidounces of acetic acid and 30 of simple syrup, adding of this mixture sufficient to 2 troyounces of squill in moderately fine powder to obtain a thin paste, and setting it aside for four hours to allow of the swelling of the squill; it is then introduced into a conical glass percolator in the neck of which a piece of wet sponge has been placed; the surface is covered with a disc of paper and the mixture poured upon it; after this has disappeared from the surface, three fluidounces of simple syrup are added, and the last portion of the syrup may be displaced by water, gradually poured on, until the percolate measures two pints.

Syrupus Pruni virginianæ.—Mix 5 troyounces of wild cherry bark in moderately coarse powder with 2 fluidounces of simple syrup, set aside for 24 hours in a close vessel, then transfer it to a conical glass percolator, and gradually pour upon it 30 fluidounces of syrup and afterwards sufficient water to make the percolate measure 32 fluid-

ounces. Prepared in this manner, syrup of wild cherry bark is an elegant transparent syrup, having in a very marked degree the odor and taste of the bark.

Syrupus Senegæ.—Mix 1 fluidounce of alcohol with 15 fluidounces of syrup, and with 2 fluidounces of this mixture moisten 4 troyounces of senega in moderately coarse powder, transfer this to a conical glass percolator, and gradually pour on it the mixture of alcohol and syrup, and when this has passed through, sufficient syrup to make the percolate measure 1 pint. Thus prepared, the syrup has the odor and taste of the root very decidedly.

In the same manner, using a mixture of 1 fluidounce of alcohol and 15 of syrup, were prepared

Syrupus rhei from 720 grains of rhubarb, in moderately coarse powder;

Syrupus rhei aromaticus, from 120 grains of rhubarb, 15 grains of nutmeg and 30 grains each of cinnamon and cloves, all in moderately fine powder;

Syrupus ipecacuanhæ, from 1 troyounce of ipecac;

Syrupus sarsaparillæ compositus, from 3 troyounces of sarsaparilla, 180 grains of guaiacum wood and 120 grains each of pale rose, senna and liquorice root; 3 drops of oil of anise and 2 drops of oil of gaultheria are dissolved in the percolate;

Syrupus scillæ compositus, from 1 troyounce each of squill and senega; 12 fluidounces of percolate are obtained and mixed with a solution of 12 grains of tartar emetic in 2 fluidrachms of hot water.

Syrupus krameriæ, from 3 troyounces of rhatany, in moderately fine powder.

Several of the syrups were also prepared without the addition of the fluidounce of alcohol, which, however, the author does not consider objectionable, but, on the contrary, preferable. Although it takes a longer time to prepare a syrup in this manner than by the officinal process, the one suggested is claimed to yield better results because no injury by heat can occur, and because no principle is taken up in the early part of the process to be discarded and filtered out towards the end. The essay was accompanied by specimens of the syrups prepared in September, 1876.

NOTES ON FLUID EXTRACTS.

By Alonzo Robbins, Ph.G.

The subject of fluid extracts deservedly continuing to attract the attention of pharmacists, the following experiments were undertaken with the hope that they might throw some light on the question, at least so far as concerned the drugs operated upon.

The substances chosen for the experiments were senna and seneka; the senna was used in No. 40 powder, and the seneka in No. 50. The menstruum employed for the senna was made of 1 part alcohol, sp. gr. ·822, and 2 parts water. The menstruum used for the seneka was composed of 150 parts alcohol, ·822, 150 parts water and 10 parts water of ammonia. Parts by weight were used throughout. The use of parts by weight and the adoption of 100 parts of the drugs as the standard number to be taken, which allows the results to be read as percentages as well as parts, presents its advantages so plainly that it can hardly fail of approbation.

The percolators used were of glass and made specially for these experiments. They were 14 inches high, $3\frac{3}{4}$ inches diameter at the top and $\frac{3}{4}$ inch at the bottom. When in use the lower orifice was closed with a perforated cork, to which was fitted a glass tube $\frac{3}{16}$ inch diameter and 2 inches long. To the glass tube a rubber tube 3 inches long was attached, and on this was placed a pinchcock to control the rate of percolation and to stop it entirely during maceration.

Moistening and Packing of the Powder.—To 100 parts of the powdered drug from 35 to 40 parts of menstruum were added and thoroughly mixed, and the mixture passed through a No. 18 sieve. The lower end of the percolator was closed with a cork, and on this was placed a loosely-fitting plug of cotton. The moistened powder was now introduced in small portions, each portion being well shaken down, and when all was in it was rather firmly packed with a pestle; the surface of the powder was then covered with a thin layer of cotton, which was kept in place by two or three glass stoppers. The cork was now removed from the lower aperture, and the perforated cork containing the glass tube put in place and the percolation proceeded with as described. By means of the pinchcock the rate of dropping was kept at from 4 to 8 drops per minute. All of the percolators were provided with close-fitting covers. One hundred grams of the moistened powder,

when packed in the percolator, occupied a space from 7½ to 8 inches high.

A series of four fluid extracts was made from each drug and the results arranged in tabular form, the better to allow a comparison to be made of the various stages of the process. On another more condensed table is shown the rate or percentage of exhaustion in those experiments in which the percolates were taken in twenty portions. 100 grams of powder was used for each experiment.

Experiment No. 1.—As soon as the powder was packed menstruum was added, and the percolation allowed to proceed at once without maceration. The percolate was taken in portions of 25 grams each until 20 portions or 500 grams in all had been obtained, then the percolation was continued until 500 grams more had passed, which was collected in one portion.

Experiment No. 2.—When the powder was packed menstruum was added, and when the percolate appeared in the cotton plug the lower aperture was closed and maceration continued four days, and then the percolate was taken in portions as in experiment No. 1.

Experiment No. 3 was intended to show what effect repeated maceration would have in the exhaustion of soluble matter from the substances operated upon. When the percolate appeared in the cotton plug the lower aperture was closed, and maceration was continued four days, then 25 grams of percolate was obtained, and then the percolator again closed and maceration continued three days, when 25 grams more of percolate was obtained ; the percolator was now closed for two days, and then 25 grains percolate obtained. It was now closed one day, and then allowed to proceed without interruption until the full number of 20 percolates were obtained and the final 500 grams.

Experiment No. 4.—This experiment was intended to corroborate the results obtained by experiment No. 1. The percolation was allowed to proceed without maceration, and at a more rapid rate ; the percolate was taken in two portions of 500 grams each. The greater specific gravity shown by this fluid extract is not due to its containing more dry extract than the others, but is caused by the entire percolate being evaporated until reduced to 100 parts, thereby driving off all or nearly all of the alcohol, while, in the other experiments, the first 75 parts of percolate were reserved and not subjected to any evaporation.

Determination of the Dry Extract.—The amount of dry extract was determined by the following method: From the first to the tenth percolate 1 gram was weighed on a carefully tared watch-glass and evaporated on a steam bath until it no longer lost weight. After subtracting the weight of the watch-glass the residue multiplied by 25 gave the total amount of dry extract in the 25 grams of percolate. From the eleventh to the twentieth percolate 5 grams was taken and the residue multiplied by five; of the 500 grams dilute percolate 10 grams was taken and the residue multiplied by fifty. By slow percolation it appears to be possible to get about 75 per cent. of the dry extract in the first 75 parts of percolate, whether previously macerated or not, and practical exhaustion is arrived at when the total percolates amount to $3\frac{1}{2}$ times the weight of the drug, these containing nearly 98 per cent. of the total dry extract yielded. The percolation might even be stopped when percolate equaling $2\frac{1}{2}$ times the weight of the drug is obtained, as that would contain nearly 95 per cent. of the total extract.

The third experiment, particularly, with seneca was quite a disappointment. By a preformed opinion, I expected to get such results from remaceration in facility of exhaustion and economy of menstruum as would quite overbalance the value of the greater length of time required for the process.

Weight of Dry Extract in each 25 grams of Percolate.

	100 grams of drug used in each experiment.												
No.	Name.	1st.	2d.	3d.	4th.	5th.	6th.	7th.	8th.	9th.	10th.	11th.	12th.
1	Senna	7·25	6·50	6·50	6·25	3·75	2·00	·75	·40	·25	·15	·14	·10
2	"	10·75	9·00	5·15	3·25	2·18	1·10	·70	·55	·44	·38	·30	·22
3	"	10·75	9·54	5 92	3·00	1·29	1·00	·75	·50	·44	·38	·25	·37
4	"												
1	Seneka	10·50	8·25	7·00	5·25	3·25	1 50	1·00	·63	·50	·38	·40	·30
2	"	10 50	9·25	6·00	4·25	3·25	2·25	1·50	1 25	1·00	·50	·46	·50
3	"	9·00	8·50	7·00	5·75	3·00	2·50	1·75	·88	·50	·50	·38	·44
4	"												

No.	100 grams of drug used in each experiment. Name.	13th.	14th.	15th.	16th.	17th.	18th.	19th.	20th.	Dry Extract in 500 grams Dilute Percolate.	Total Dry Extract obtained.	Specific Gravity of the Fluid Extract.	Specific Gravity of Menstruum at 72°F.
1	Senna	·09	·09	·08	·07	·06	·05	·05	·05	·75	35·33	1·095	·954
2	"	·18	·15	·13	·12	·09	·04	·05	·04	·50	35·32	1·095	·954
3	"	·22	·15	·12	·09	·08	·05	·04	·04	·50	35·48	1·106	·954
4	"									·25	35·25	1·142	·954
1	Seneka	·25	·18	·13	·13	·12	·11	·08	·05	1·00	41·01	1·086	·926
2	"	·25	·19	·12	·25	·15	·14	·10	·05	·25	42·21	1·098	·926
3	"	·35	·28	·15	·14	·15	·11	·10	·08	·50	42·06	1·095	·926
4	"									·50	40·00	1·104	·926

Rate of Exhaustion.

No.	Name.	1st 5 Percolates.	2d 5 Percolates.	3d 5 Percolates.	4th 5 Percolates.	500 grams Dilute Percolate.
1	Senna	30 25	3·55	·50	·28	·75
2	"	30·33	3·17	·98	·34	·50
3	"	30·50	3·14	1 04	·30	·50
1	Seneka	34·25	4 01	1·26	·49	1·00
2	"	33·25	6·50	1·52	·69	·25
3	"	33·25	6·13	1·60	·58	·50

In the following formulas for fluid extracts in view of the results shown by the foregoing tables I have omitted maceration for the seneka and retained it for senna. Direct percolation really appears to be best for seneka, and probably for some other drugs, but I believe that in most cases maceration would be advantageous.

Fluid Extract of Seneka.

Take of Seneka, in powder No. 50, . . 100 parts
Water of ammonia,
Alcohol, s. g. ·822,
Water, each, a sufficient quantity.

Mix 150 parts each of alcohol and water, add 10 parts water of

ammonia, and, having moistened the seneka with 35 parts of the mixture, put it into a narrow conical glass percolator in small portions, each portion being well shaken down, and when all is in pack firmly with a pestle, cover the surface of the powder with a layer of cotton, which keep in place by two or three glass stoppers, and gradually add the menstruum. When the percolate amounts to 75 parts expose it in a shallow dish to the open air until it has lost about 5 parts, or until the odor of ammonia is no longer perceptible. Continue the percolation with the same menstruum until the seneka is exhausted; evaporate this percolate by means of a water-bath to 30 parts, mix it with the reserved portion, and make up the quantity to 100 parts with alcohol.

This fluid extract is quite dark in color, forms no deposit on standing and remains clear when mixed with simple syrup to make syrup of seneka.

If the percolation proceeds slowly the odor of ammonia will not be perceptible in the 75 parts of reserved percolate, but it was thought best to expose it to spontaneous evaporation to make sure that no free ammonia should be present in the finished preparation. The addition of an alkali to the preparations of seneka is by no means original; it has been previously suggested by Prof. Procter and Mr. Bullock ("Am. Jour. Phar.," 1862, p. 136), by Dr. Squibb ("Proceedings Am. Pharm. Assoc.," 1871, p. 454), by Prof. Markoe ("Proceedings Am. Pharm. Assoc.," 1873, p. 519) and by Prof. Maisch. The first two gentlemen added bicarbonate of potassium to the fluid extract; Dr. Squibb used ammonia; Prof. Markoe did not specify what alkali, and Prof. Maisch used bicarbonate of sodium. I was led to the use of water of ammonia by the ease with which, owing to its volatility, any excess might be removed.

Fluid Extract of Senna.

Take of Senna, in powder No. 40, . . 100 parts
Alcohol, s. g. ·822,
Water, each, a sufficient quantity.

Mix 50 parts of alcohol with 100 parts of water, and moisten the senna with 35 parts of the mixture, mix well and pass through a No. 18 sieve, then put into a narrow conical glass percolator, in small portions, each portion being well shaken down, and when all is in pack firmly with a pestle, cover the surface of the powder with a layer of cotton, which keep in place by two or three glass stoppers; add the

menstruum, and when the percolate appears in the cotton plug at the orifice close the percolator and macerate 48 hours, then allow the percolation to proceed until 75 parts of percolate have been obtained, which set aside, and continue the percolation until the senna is exhausted; evaporate this percolate by means of a water-bath to 25 parts, and mix it with the reserved portion.

Wishing to ascertain the value of the use of glycerin in fluid extract of senna, three fluid extracts were prepared, differing only from the above in containing respectively 10, 15 and 25 per cent. of glycerin, which was added to the dilute percolates previous to evaporation. For that sample containing 25 per cent. of glycerin only 60 parts of percolate were reserved. Too short a period has elapsed since their preparation to justify an opinion as to the effect of time on these samples, but at present my belief is that glycerin is of no service in fluid extract of senna.

In regard to repercolation, it is probable that the additional labor and trouble of the several packings and percolations required by that process may be quite equaled by the labor and trouble of evaporation required by the process of simple percolation; the remaining dilute percolate may also represent what usually disappears into the air during evaporation in simple percolation. If some modification of the process of repercolation could be made which would do away with the necessity of any dilute percolate remaining over, I have no doubt about its greatly contributing to the general adoption of that process. Having no practical experience with repercolation, I am reluctant to suggest a modification of it, but it appears to me that if 100 parts of drug were taken and divided into three equal portions, and 25 parts of reserve percolate obtained from each of the first two portions and 50 parts from the remaining portion, and then stop, a near approach to at least practical exhaustion would be made. There would certainly be some loss, but as the 50 parts of final percolate would be obtained from $33\frac{1}{3}$ parts of drug that loss could not seriously affect the activity of the preparation.

I hope that in the next U. S. Pharmacopœia both processes may be made officinal, thereby allowing pharmacists to use whichever they may prefer.

Philadelphia, June 17th, 1878.

E ACTIVE CONSTITUENTS OF ERGOT.

By Phil. H. Dilg.

Ergot has been frequently the subject of investigation previous to the discovery, by Wenzell, of the alkaloids ergotina and ecbolina, to the last of which the effects of ergot were supposed to be due ("Am. Jour. Pharm.," vol. xxxvi, p. 193, 1864). Since then the same author, in 1872, has published a modified process for obtaining his alkaloids, and a host of other investigators have made known their results. The most recent publications are two interesting and exhaustive papers, throwing much light upon the hitherto somewhat obscure and rather complicated literature of ergot, viz., "Ueber die wirksamen und einige andere Bestandtheile des Mutterkorns" (on the active and some other constituents of ergot), by Dragendorff and Podwissotzky, reprint from the "Archiv für experim. Pathol. und Pharmacol.," vol. vi, 1876, and an inaugural essay for the degree of "Master of Pharmacy," by Theo. Blumberg, entitled "Ein Beitrag zur Kenntniss der Mutterkorn-Alkaloide" (a contribution to the knowledge of the ergot alkaloids) Dorpat, 1878. The following is a brief summary of what appears to me to be the principal results obtained by these authors with the most important constituents of ergot:

Though long known that ergot yields its active principle to cold water its precise nature has for many years been a subject of continued controversy. It is principally due to the united efforts of Prof. Dragendorff and von Podwissotzky, of the Pharmac. Institute of the University of Dorpat, that it has now been proven that the most active constituent is an acid termed *sclerotic acid*, which is present in combination with K, Na and Ca, which salts are freely soluble in water. It is, however, rivaled in action, both qualitatively and quantitatively, by a colloidal substance, *scleromucin*, which is obtained in connection with the acid in the following manner: Digest ergot, previously exhausted by ether and absolute alcohol, with water, dialyze, evaporate the dialyzate to a syrupy consistence, and treat with sufficient alcohol to obtain a mixture containing 40 to 45 per cent. alcohol, which precipitates the potassium phosphate; while more alcohol added until the strength is increased to 75 or 80 per cent., precipitates the salts of sclerotic acid, which are soluble in dilute but insoluble in stronger alcohol, and leave about 19 per cent. of ash.

The filtrate, upon which alcohol has no further effect, produces with

ether a slight precipitate, which after a few days' standing forms a syrupy, brown mass, which has scarcely any medicinal virtue. The filtrate from this precipitate, in which the reactions still distinctly indicate the presence of Wenzell's alkaloids, after evaporating the ether and alcohol, does *not* produce the specific action of ergot.

The dark liquid remaining on the dialyzator, when mixed with sufficient alcohol to bring it to 45—50 per cent., precipitates the *scleromucin*, which while moist forms a mucilaginous solution with water, but after drying is only partially soluble, differing in this respect from sclerotic acid, which is soluble, in all proportions, before and after drying.

Sclerotic acid is obtained in a nearly pure state by kneading the mixed sclerotates as obtained above, with 80 per cent. alcohol, and afterwards dissolving them in 40 per cent. alcohol; the solution is mixed with an excess of hydrochloric acid, and after several hours precipitated with absolute alcohol, whereby the ash is reduced to about 3 per cent., and consists mainly of some silica, manganium, and phosphates of iron and potassium. The acid is not a glucoside, and yields no precipitates with the reagents for alkaloids, except with phosphomolybdic acid a yellow, and with tannin a nearly colorless one. Sclerotic acid is obtained as a yellowish-brown, tasteless and inodorous substance, which has a very slight acid reaction, and is hygroscopic without being deliquescent. It is very well adapted for subcutaneous appliances, in doses of 0·03—0·045 gram.

Scleromucin is darker in color, slightly hygroscopic, gummy, inodorous and tasteless; yields 26·8 per cent. of ash, and, like sclerotic acid, contains nitrogen, is not a glucoside, and is precipitated by tannin and phosphomolybdic acid.

Good ergot yields about 4 to 4½ per cent. of sclerotic acid, and about 2 to 3 per cent. of scleromucin.

In the commercial extracts the acid is found in variable quantities, depending on the strength of alcohol used in their manufacture. Scleromucin is generally not present, except sometimes in very small quantities, as, for instance, in Bonjean's ergotin, which contains considerable sclerotic acid.

The following coloring matters have been isolated from ergot: yellow crystalline scales of *scleroxanthin*, in combination with the pale yellow needle-like crystals of its anhydrid termed *sclerocrystallin*; also an amorphous mass, soluble with difficulty in ether, alcohol and chloro-

form, to which the name *scleroiodin* has been given. By far the most important coloring matter, however, is *sclererythrin*, to which the characteristic reactions of ergot are due, which were erroneously ascribed to a ferruginous substance supposed to be allied to the coloring principle of blood.

If ergot is exhausted by ether or alcohol, and then treated with acidulated alcohol or ether, sclererythrin will be liberated from its calcium compound and produce a red solution. Diluted solutions of alkalies and alkaline carbonates dissolve sclererythrin, with a beautiful murexide color. Ether agitated with this solution is not colored, but after neutralizing with an acid a delicate and characteristic reaction occurs, by imparting a red-brown color to the ether. Alcohol or ether will not dissolve the sclererythrin directly from ergot, unless the drug be previously acidulated.

In connection with the above investigations, Dragendorff and Podwissotzky isolated a bitter alkaloid, which they call *picrosclerotin*, and a yellow acid, which they named *fuscosclerotic acid*. They were obtained in purifying sclererythrin, by precipitating its alcoholic solution with lime water, when picrosclerotin and fuscosclerotate of calcium remained in solution; on the addition of dilute sulphuric acid and agitating with ether, this solvent took up the fuscosclerotic acid and left nearly all picrosclerotin behind, which is readily dissolved by acetic or sulphuric acid and reprecipitated by ammonia.

A solution of the amorphous alkaloid subcutaneously injected was observed to produce in frogs decreased sensibility, paralysis of the extremities, and in 10 or 12 minutes death, without convulsions. Blumberg noticed that picrosclerotin is colored violet by oil of vitriol, and that in the isolated state it rapidly loses its activity, forming a resinous mass, which is insoluble in acetic and dilute sulphuric acid, and colored brown by oil of vitriol. It is identical with the resin obtained by Ganser (1870) from the fixed oil of ergot, from which Blumberg isolated also a crystalline alkaloid, closely allied and probably identical with picrosclerotin.

As above stated, the filtrate showing the reactions of Wenzell's alkaloids proved to be destitute of medicinal action; Dragendorff and Podwissotzky isolated the alkaloids by Wenzell's process from this filtrate as well as directly from ergot, and found that both ergotina and ecbolina are precipitated by corrosive sublimate from their concentrated

solutions, and that both contain admixtures of different salts and foreign matters. Blumberg has made the same observation, and agrees with Dragendorff in regarding the two as only one alkaloid, which is but partially precipitated by corrosive sublimate, since its compound with the latter is not insoluble in water, the solution being, however, precipitated by phosphomolybdic acid.

Blumberg has also isolated the crystalline alkaloid *ergotinina* observed by Tanret in 1875. The oil of ergot, obtained by extraction with ether, is repeatedly agitated with water acidulated with sulphuric acid, and the acid solution rendered alkaline by carbonate of sodium. The precipitate may be dissolved in ether or in absolute alcohol, which solutions on being concentrated yield crystals of ergotinina. These are colored violet-blue by oil of vitriol, and by Froehde's reagent at first violet, then soon blue, finally blue-green, and on heating olive-green. Ergotinina soon decomposes, forming a resinous mass, and when in solution, injected subcutaneously, produced in frogs effects very similar to those observed from picrosclerotina.

Philadelphia, June 12, 1878.

GLEANINGS FROM THE GERMAN JOURNALS.

By Louis von Cotzhausen, Ph.G.

The Relation of Chemical Compounds in Volatile Oils.—Volatile oils consist either of several carbohydrogens or of carbohydrogens and oxygenated substances, among which there is a certain relation noticeable, as is seen from the following list:

Oil of Dryobalanops Camphor, $C_{10}H_{16}$,$C_{10}H_{18}O$.
Caraway, $C_{10}H_{16}$,$C_{10}H_{14}$,$C_{10}H_{12}O$.
Thyme, $C_{10}H_{16}$.$C_{10}H_{14}O$.
Dill, $C_{10}H_{16}$,$C_{10}H_{14}O$.
Caraway, $C_{10}H_{16}$,$C_{10}H_{14}O$.
Eucalyptus, $C_{10}H_{16}$,$C_{10}H_{14}$,$C_{10}H_{16}O$,$C_{10}H_{14}O$.
Sassafras, $C_{10}H_{16}$,$C_{10}H_{10}O_2$.

G. Bruylants has endeavored to determine the relation of the constituents of oil of tansy and of valerian, with the following results:

Oil of tansy contains about 1 per cent. of a terpene, $C_{10}H_{16}$, boiling between 160 and 165°C., about 26 per cent. of an alcohol, $C_{10}H_{18}O$, boiling near 205°C., and about 70 per cent. of the aldehyd *tanacetyl hydride*, boiling at 195°C. and forming a crystalline compound with bisulphite of sodium.

Oil of valerian was found to contain a terpene, $C_{10}H_{16}$, the alcohol *borneol*, $C_{10}H_{18}O$, the ether of the same, $(C_{10}H_{17})_2O$, and the formic, acetic and valerianic ethers of the same, the latter having the formula $C_{10}H_{17}C_5H_9O_2$.

The seeds of Euphorbia Lathyris, *Lin.*, are known in Europe as semen cataputiæ minoris. O. Zander obtained from them by treatment with bisulphide of carbon, 42 per cent. of a yellow, clear, fixed oil. 5 drops of it, taken in water, caused a lasting burning pain in the throat, followed by nausea, vomiting, and finally strong purgative effects. Applied externally it caused a burning sensation, which induced the author to believe that it might be advantageously employed as a substitute for the more expensive Croton oil.—*Archiv der Pharmacie*, March, 1878, p. 211.

Agaricus atrotomentosus.—By extracting this agaric with ether W. Thoerner obtained a beautiful wine-red liquid, and after evaporating a dark brown shining crystalline mass, which was purified by boiling with an alkali, acidulating the solution, separating the precipitate by filtration, and recrystallizing from boiling alcohol. The purified compound forms dark brown scales having a metallic lustre; dissolving in alcohol with a wine-red and in alkalies with a yellow color. It is insoluble in water, ligroin, benzol, chloroform and carbon bisulphide, and with difficulty soluble in boiling alcohol and glacial acetic acid. It appears to be a dioxykinon, $C_{11}H_6O_2(OH)_2$, and probably a derivative of a carbohydrogen, $C_{11}H_{10}$.

The same author has obtained from this agaric and from *Ag. bulbosus* and *Ag. integer* beautifully crystallizing double salts of platinum, with one or more alkaloids, and from A. integer also a considerable quantity of mannite.—*Ber. Deutsch. Chem. Ges.*, 1878, p. 533.

Extraction of Morphia.—Dr. Eugene Buri, referring to Stas-Otto's method, in which morphia is dissolved in amylic-alcohol, and after evaporation left in an amorphous condition mixed with impurities, likewise soluble in amylic-alcohol, suggests to evaporate this solution spontaneously in a watch-crystal, or if too bulky to evaporate it to dryness on a water-bath, treat the residue with about 1 or 2 cc. of acidulated water, pour off from the insoluble residue, supersaturate with ammonia, shake again with 2 or 3 cc. of amylic alcohol, and allow the latter to evaporate, as stated above; the residue will then consist of pure crys-

tals of morphia, while the impurities, if any are present, will form an amorphous ring on the outer edge of the glass.—*Ztsch. Anal. Chem.*, 1878, p. 185.

Phosphorus found in a Corpse Six Weeks after Death.—Dr. Elvers tells us that an analysis made of the intestines of a woman who had died under very suspicious circumstances six weeks before, proved the presence of 0·07 gram of phosphorus in the alimentary canal, which had been administered to her in soup prepared by her daughter-in-law. In connection with the analysis it was shown that water, macerated with phosphorus paste for some time, will hold a considerable amount of phosphorus suspended as a very fine powder, the mixture resembling an emulsion in appearance, and precipitating the phosphorus very slowly.—*Ztsch. Oest. Apoth. Ver.*, May, 1878, p. 224—*Vierteljahressch. f. gerichtl. Med.*

Colored Artificial Sago.—G. C. Wittstein states ("Dingl. Pol. Journ.) that artificial pearl sago prepared from potato starch often appears colored. A sample left 0·7 per cent. of ashes, 0·4 of which were found to consist of oxide of iron.—*Schw. Wochenschr.*, 1878, p. 132.

Chinese rice paper is not really a paper, but consists of the pith of the stems of *Aralia papyrifera*, cut with large and very sharp knives either radially into small, or spirally into large layers, as thin as paper, which are pressed smooth and are used in China for delicate aquarell paintings, and in Europe in the manufacture of artificial flowers, etc.—*Pharm. Centralh.*, May 9, p. 182.

Glacialin is the name of a preserving liquid, consisting of a solution of 9 parts boracic acid, 4½ parts borate of soda, 3 parts sugar, and 4½ pts. glycerin, in about 200 parts water.—*Pharm. Zeit.*, May 11, 1878.

GLEANINGS FROM THE FRENCH JOURNALS.

By the Editor.

Solubility of some Organic Acids.—E. Bourgoin has determined that 100 parts by weight of pure ether, absolute alcohol and 90 per cent. alcohol dissolve at 15°C. (59°F). the quantities of acids given in the following table :

GENERAL LIBRARY University of MICHIGAN

	Pure Ether.	Absolute Alcohol.	90 per cent. Alcohol.
Acid, benzoic	31·35	46·68	41·62
citric	2·26	75·90	52·85
gallic	2·56	38·79	23·31
oxalic	1·266	23·73	14 70
phtalic	0·684	10·08	11·70
salicylic	50·47	49·63	42·09
succinic	1·265	7·51	12·59
tartaric	0·400	25·604	41·135

Journ. de Phar. et de Chim., March, 1878, 173–179.

A new oxide of lead has been obtained by H Debray. The oxides hitherto known are litharge, PbO, binoxide of lead or plumbic anhydrid, PbO_2, and red lead or plumbate of lead, $Pb_3O_4=(PbO)_2PbO_2$. The latter compound is formed by heating either of the two former oxides to about 440°C (824°F). Debray has observed that when binoxide of lead is heated to 350°C. (662°F)., a rapid disengagement of oxygen takes place, which soon becomes less active, and when it has nearly ceased, the binoxide has been converted into sesquioxide or rather into the neutral plumbate of lead, $PbO.PbO_2$. The same compound is formed by heating litharge to the degree indicated, and passing a current of oxygen over it; it is a greenish-brown powder which is very slowly oxidized to red lead in an atmosphere of oxygen and on continuing the heat.—*Ibid.* April, p. 549–253.

Separation of arsenic from other metals.—Ph. de Clermont and Frommel have made the observation that the freshly-precipitated sulphides of many metals when boiled with water are decomposed with the formation of sulphuretted hydrogen and oxide of the metal. Arsenic being the only one whose oxide is soluble in water, the authors propose its separation by washing the sulphides, obtained from acidulated solutions, until every trace of hydrochloric acid has been removed, after which the filter with its contents is boiled, preferably in a retort, the tension therein seeming to favor the dissociation; the precipitate from ·2 gram of arsenic will be completely decomposed, when 500 or 600 cubic centimeters of water have been distilled. The contents of the retort are then filtered and the arsenic determined in the usual manner. —*L'Union Phar.*, April, p. 104.

Curare.—Dr. Jobert, in a letter dated Belin de Para, gives the following information concerning the preparation of this poison by the Indians. The principal ingredients are *urariuva* (probably *Strychnos castelnae*, Wed.)

and *eko* also called *pani du maharâo* (probably *Coccculus toxiferus*, Wed.) The young bark of these plants is well scraped, and the scrapings mixed in the proportion of 4 parts of the powder and 1 part of the latter; the mixture is well kneaded with the hands and in a funnel made of a palm leaf exhausted with cold water, the liquid being returned 7 or 8 times. The red infusion is boiled with fragments of *taja* (an aroidea) and *mucura-ea-ha* or *eone* (probably *Didelphys cancrivora*). After about 6 hours the liquid has acquired a thick consistence and is mixed with the scrapings of three species of pepper (Artanthe?) and *tau-ma-gere* and again boiled and allowed to cool, when it will have the consistence of a thick paste.—*Jour. de Phar. et de Chim.*, June, p. 443.

Catechin.—A. Gautier has communicated to the Académie des sciences his researches on catechin from catechu. He found its formula to be $C_{21}H_{18}O_8$, which differs from the formulas as ascertained by Zwenger, Hlasiwetz and Rochleder. Fused with potassa, protocatechate of potassium, $KC_7H_5O_4$, and phloroglucin, $C_6H_6O_3$, are the principal decomposition products obtained, besides a hydrocarbon, CH_4, water, formiate and carbonate of potassium, according to the supply of oxygen. Heated with very diluted sulphuric acid to 140°C., an amorphous orange-colored body, $C_{28}H_{22}O_7$, is obtained, which is little soluble in hot water, precipitates ferric salts blackish green and is readily oxidized to red and brown compounds. Among the products of decomposition are also two which are soluble in ether, one of which is precipitated by acetate of lead and is protocatechuic acid; the other seems to have the composition $C_{14}H_{16}O_7$ and to be a polyatomic phenol.—*Jour. de Phar. et de Chim.*, May, p. 368.

Jaborandi.—Prof. Baillon has examined the jaborandi used by the pharmacists of Paris and noticed that three kinds are employed, namely, *Piper* (*Serronia*) *jaborandi*, Velloso, *Pilocarpus pennatifolius*, Lém., and *Piloc. Selloanus*, Engl. The first is now very rare in commerce. In regard to the others he suggests that they may, perhaps, be merely two varieties of one species. The author has in his possession fresh leaves of *Pil. pennatifolius*, the nerves of which are destitute of hairs on both sides; he has noticed, however, a slight difference in the color of the bark, which, near the top of the branches of *Pil. Selloanus*, is usually more yellowish or of a pale brown.—*Ibid.*, p. 393.

(For a description of these species see "Amer. Jour. Phar.," 1875, p. 177 and 214.)

The Lactic Fermentation of Milk Sugar. By Richet.—Milk kept at 40°C. coagulates and acquires an acidity equal to 1·6 gram of lactic acid for 100 of milk. The fermentation is completely arrested if sufficient hydrochloric or sulphuric acid is added to the milk, so that the acidity will correspond with 1 per cent. of lactic acid. But if gastric juice is added to the milk the casein will be coagulated and redissolved, and the lactic fermentation will proceed with an extraordinary rapidity, so that at the end of four or five days as much as 4 per cent. of lactic acid may have been produced. The rational explanation of this difference seems to be that the dissolved casein serves as a nutrition to the ferment; for if the milk is filtered immediately after its coagulation by rennet, the whey which contains all the lactose, but no casein, will acquire an acidity, never surpassing 1·6 per cent. of lactic acid. On the other hand, casein, deprived of milk sugar, will ferment and yield lactic and butyric acids among the products of decomposition. These observations explain why unfiltered milk ferments better than filtered milk; the author obtained, in one case, from the former, 3·9 per cent., but after filtration only 1·6 per cent. of acid.—*Jour. de Phar. et de Chim.*, May, p. 371.

Sulphovinate of Quinia.—P. Carles has ascertained that an acid and a neutral sulphovinate of quinia may be obtained, the former of which is very hygroscopic and, on account of its strong acid reaction, is not adapted for subcutaneous injections. The neutral salt is obtained by dissolving 16·6 grams of pure sulphovinate of sodium in 200 grams of 90 per cent. alcohol, and 42·8 grams officinal sulphate of quinia in 600 grams of the same alcohol, mixing the solutions, filtering from the precipitated sodium sulphate, and evaporating. The salt is perfectly neutral, crystallizes with difficulty in radiating prisms, is inodorous, of a very bitter taste, dissolves in 3 parts of water at 15°C. and in less alcohol. It is likewise very soluble in acetic ether and glycerin, but insoluble in absolute ether, benzol, oil of turpentine and fixed oils; with the latter, however, a kind of an emulsion may be formed on the addition of a few drops of alcohol.—*Ibid.*, June, p. 463, from *Bull. Soc. Phar.*, Bordeaux, March, 1878.

Pancreatin.—According to Th. Defresne, good pancreatin should have the following characters:

It is a tawny-colored, rather hygrometric powder, has a strong animal odor and taste, and dissolves in water to the extent of 70 per cent. of its weight; the limpid solution coagulates like albumen. It digests not less than 30 parts of albumen, transforms 8 parts of starch into sugar and completely decomposes 10 parts of lard. The digestion of albumen takes place in the presence of a little acid, one drop of lactic acid being sufficient for 15 grams of albumen and 25 grams of water; no other addition is required for starch or lard; the temperature may vary between 20° and 40°C. (68° and 104°F.)

The author has examined some samples of German pancreatin, which were of a whitish color, resembling powdered orris root, of a sweetish odor and a cheese-like taste; they contained about 80 per cent. of milk sugar and 15 per cent. of insoluble matter, and digested between 0 and 6 parts of albumen. A sample of French pancreatin was in greyish pieces, of a strong animal odor and taste, completely soluble in water, but the solution was not coagulated by heat and did not digest albumen.—*Rép. de Phar.*, April, p. 153.

Purification of Carbonic Acid Gas.—Méhu states that the disagreeable odor and taste of carbonic acid gas generated from dolomite were completely removed by passing the gas successively through water, persulphate of iron, permanganate of potassium, and again through water, when it was unobjectionable for the preparation of mineral waters.—*Jour. de Phar. et de Chim.*, April, p. 290.

A Hydrate of Ether.—On filtering an etherial liquid with free access of air, a frost-like congelation is observed on the upper part of the filter, its appearance and quantity depending upon the temperature and the hygrometric state of the atmosphere. Tanret has collected some of that solid substance, and found that after it had been completely freed from ether by strongly blowing upon it, it had the temperature—3·5°C. (25·7°F.), and on fusion yielded 17 to 18 parts of water for 37 of ether; the formula $(C_2H_5)_2O.2H_2O$ requires 18 parts.—*Ibid.*, May, p. 345–347.

Color Reactions of Oil of Valerian.—In an essay on the chemical constitution of oil of valerian (see page 339), communicated to the Académie royale de médecine de Belgique, G. Bruylants gives the following color reactions which may be observed with the freshly prepared or old oil, and with all etherial and alcoholic tinctures of the root:

1. Gaseous hydrochloric acid gas imparts a splendid purplish-red color.

2. Perchloride of phosphorus gives a red color, turning to blue and finally to green when a moderate heat is applied.

3. Heated with a little nitric acid, a purplish-red color is produced, which changes to violet and blue.—*Ibid.*, June, p. 439.

Wine of Creasote.—Dr. Fournier gives the following formula: 6 grams of beechwood tar creasote are dissolved in 125 grams of alcohol; to the solution is added simple syrup 400 grams, and enough Malaga wine to make one liter. Each tablespoonful contains ·30 gram of creasote, and the dose is readily taken in a glass of sweetened water.—*Jour. de Phar. et de Chim.*, May, p. 377.

The formula of Bouchard and Gimpert is as follows: Creasote 13·5 grams, alcohol 250 grams, tincture of gentian 30 grams and Malaga wine sufficient for 1 liter.—*L'Union Phar.*, May, p. 132.

Caustic of Chloride of Zinc.—Under the name of *Pâte de Canquoin* a preparation is used in France which, according to the Codex, is prepared by dissolving chloride of zinc in a small quantity of water and adding, with continual trituration, an equal weight of flour. P. Carles has found this to be too hygroscopic, and proposes to triturate in a mortar 10 grams of fused chloride of zinc with 2 grams of 60 per cent. alcohol, and incorporating, with constant trituration, 15 grams of wheat flour. This mass may be formed into cylinders of suitable size, and when once dry is but little affected by atmospheric humidity. The author has kept samples in stopped vials for over three years without noticing any alteration.—*L'Union Phar.*, April, p. 100.

THE FAST-GROWING VARIETY OF CINCHONA CALLED PUBESCENS.

By J. E. Howard, F.R.S.

I send a few facts to complete (thus far) the history of the above promising sort, to which Dr. de Vrij has very properly called attention in your columns (April 13); and respecting which I had much correspondence with the late Mr. McIvor.

It is about ten years since this skillful cultivator raised from seed two sorts of *officinalis*, which for some reason he considered to be hybrid with *C. succirubra*. The two were alike distinguished by strong and

vigorous habits of growth, and at a little distance it was difficult to discriminate between them. As they developed, however, it was found that the one with slightly pubescent leaves yielded much more quinia in the bark than the other. I suggested, for distinction's sake, calling this the *var. pubescens*, which has unfortunately since become changed into *C. pubescens*, How., an entirely erroneous designation.

Referring to the bark sent both to Dr. de Vrij and to myself in 1873, Mr. McIvor says, "This bark is taken from a hairy-leaved variety of *C. officinalis*. It is a tree of wonderful growth. It produces enormously thick bark, and the tree is not injured by wind. The tree from which I now send you the bark is only five years old. It is twenty-six feet high, and has a stem of sixteen inches in circumference at the ground, and the bark now sent you is taken in a strip from the stem to the height of about twelve feet from the ground. This tree grows at least twice as fast as *C. succirubra*. The bark of this variety which I sent to Dr. de Vrij was taken from a tree grown at a high elevation and with a N. W. exposure. The bark now sent you is taken from a tree growing at a low elevation with a N. E. exposure. Dr. de Vrij found the bark of this species to yield 10·67 per cent. of total alkaloids, with 4·72 of crystallized sulphate of quinia. If under all conditions this bark is found to yield this amount of alkaloids, and especially quinia, it is certainly the best plant we can grow; being hardy and of rapid growth and perfectly free from canker and other diseases to which the *officinalis* and especially the *calisaya* are liable. I therefore sincerely hope that you will be able to confirm Dr. de Vrij's results, and if this occurs in the two barks taken from different positions of elevation, it will establish the value of the species beyond doubt."

The examination which I made quite confirmed and even surpassed the results obtained by Dr. de Vrij, as the notes I have preserved indicate a produce equal to 6·00 sulphate of quinia, 5·00 sulphate of cinchonidia, cinchonia and amorphous alkaloid 1·20 per cent. Even this was exceeded after an additional year's growth. In June, 1874, Mr. M. writes, "I take the liberty of again sending you some bark of *C. pubescens*. This sample is of the narrow strips left on the same tree from which I took the bark sent to you in December last. If not giving you too much trouble, I would very much like to know what this bark yields, the more so [as some persons] have been trying to

impress on the government here that mossing does not improve the bark on the tree generally, and that the renewing bark draws the alkaloids from the natural bark adjoining, *i. e.*, that the alkaloids in the natural bark are transferred to the renewing bark. I do not believe this to be the case, but if it is so in any degree the bark now sent you will show exactly to what extent this takes place; as the narrow strips of bark were surrounded on all side by renewing bark."

The examination of the above "strips" was therefore of special interest in connection with an important problem in vegetable physiology. They gave equal to—

	Per cent.
Sulphate of quinia,	6·94
cinchonidia,	4·48
cinchonia,	0·20
quinidia,	0·14
Amorphous alkaloid,	1·14
	12·90

Thus disproving the transference theory.

It will be noticed that my friend de Vrij has recently obtained more quinia and less cinchonidia than I have done. This is no doubt owing to his having described the results of examination of renewed bark. I have also a small specimen of this, but have not subjected it to examination.

It is obvious that a plantation of this kind is likely to be very profitable. Mr. McIvor wrote me in August, 1875, that 20 acres had been planted in the previous year, and that in the year above named they had planted out 60 acres on the Kartairy estate. The next year occurred his lamented decease, and I am unable to continue my record in consequence.

The great question is, how far is it possible to count upon the propagation of this sort. Mr. McIvor speaks with a varied amount of certainty. In the last letter I had from him he says, "You are quite correct as to the danger of relying on plants raised from seeds of our hybrids; of course to be certain we must propagate from cuttings only, but *pubescens* comes pretty true. Still I would not rely on a plantation formed by seedlings even of this variety."

In 1874 Mr. M. sent me a few seeds, from which I have one plant[1] remaining, which reproduces all the character of vigorous growth and

[1] Another has diverged.

promising aspect of the parent plant. It is already between six and seven feet in length, and the leaves reach the length of 9 or 10 inches by 6 inches in width. The plant may be a hybrid; but if so, as admitted by Mr. McIvor, it has much more the characteristics of *C. officinalis* than of *C. succirubra*. I send for the Musum of the Pharmaceutical Society a section of a tree of this sort sent me by Mr. M., from which those who are conversant with the characteristics of the wood of these different species will easily discern what I have stated to be true. A good botanical specimen in a collection given me by McIvor does not appear to settle the question of hybridity.

It remains that I add a parting word about *Cinchona pubescens*. This very distinct species was named by Vahl, and has been described and figured by Dr. Weddel. Not much is known about the β form, but in its form *Pelletierana* it is the source of the bark from whence aricina was procured, and from whence I have myself many times obtained this much contested alkaloid. Its whole chemical constitution is distinct from other cinchonæ, the cinchona red being superseded by an intensely yellow substance. It is no longer to be met with in commerce, as it is useless except for scientific investigation, and has certainly never been introduced into India. So I hope we have heard the last of *C. pubescens*, Howard, though not of the promising sort of *officinalis* which obtained this erroneous name.—*Phar. Jour. and Trans.* [Lond.], April 25, 1878.

QUINIRETIN.

By Professor Flückiger.

Forty years ago Geiger was well aware of the fact that aqueous solutions of salts of quinia are decomposed in sunlight. It would appear that Pasteur[1] attributed this alteration to the formation of quinicia and cinchonicia, for in his researches on the two latter substances he remarks, "J'ai reconnu, en effet, qu'en exposant au soleil, seulement durant quelques heures, un sel de quinine et de cinchonine quelconque, en solution étendue ou concentrée, il s'altère à tel point que la liqueur prend une coloration rouge-brun extrêmement foncée. Cette altération est d'ailleurs de la même nature que celle qui s'effectue sous l'influence d'une température élevée." He recommended the manufacturers

[1] "Comptes Rendus," xxxvii, 1853, p. 114.

of quinia not to expose to direct sunlight either their products or even the barks.

Carles[1] exposed powdered Calisaya bark to sunshine during the month of August, and found it to yield afterwards less quinia than before. Broughton[2] likewise pointed out the detrimental influence of direct sunshine on barks collected in the government plantations in the Nilghiris.

Hesse,[3] on the other hand, stated that the influence of light was by no means so powerful, and did not favor very vigorously the formation of amorphous alkaloids. He exposed for seventy-three days to sunlight an aqueous solution containing 3·72 per cent. of quinia in the form of sulphate. Quinicia was found to be at last contained in the liquor, besides a red amorphous substance no longer possessing the property of neutralizing the acids. Hesse did not meet with the latter in the barks as might be expected, supposing sunlight to act in the same way on the alkaloids contained in the tissue itself.

Mr. David Howard[4] ascertained that quinicia at least occurs in the mother-liquids obtained in manufacturing quinia, and Dr. de Vrij[5] is of the opinion that not only quinicia and cinchonicia, but another third amorphous alkaloid is present in the barks.

The influence of sunlight on the latter and on their bases is a very interesting question, as shown by the experiments just alluded to. They refer not to the alkaloids, but to salts of them. What part is played by the acids with which the alkaloids are combined? Are the alkaloids themselves likewise altered by sunshine or only their salts?

I thought it of some interest to submit quinia to a few experiments, and was struck to see how rapidly and thoroughly it is altered; 2,000 parts of water at 17°C. dissolve a little more than 1 part of quinia, yielding a clear solution, which remains colorless and clear for any length of time, provided it be kept in the dark or in dispersed daylight, in closed or in open phials. But on exposure to sunlight in July or August, for a few hours, the liquid turns yellowish or brownish, the coloration being developed uniformly in the whole solution, not begin-

[1] "Jour. de Pharm.," xii, 1870, p. 161.
[2] "Blue Book, East India Cinchona Plantation," 1870, fol. 241, 243, 118.
[3] "Annalen der Chemie," clxvi, 1873, p. 275.
[4] "Pharm. Journ.," i, 1871, p. 485, and ii, 1872, p 765.
[5] "Pharm. Journ.," iv, 1874, p. 589.

ning at the surface. By and by it becomes turbid, and after a few days a flocculent brown matter sinks down, amounting when dry to nearly the quantity of quinia originally employed. A very little of it remains in solution, for the latter remains brownish and has always a bitter taste, reminding of quinia. Yet in the clear solution the alkaloid is present in so trifling an amount that the brown liquid becomes but very faintly turbid on addition of either tannic acid or iodohydrargyrate of iodide of potassium. By both these tests, as well known, precipitates are produced in a solution containing even less than 1 part of quinia in 2,300 parts of water before it is submitted to the action of light.

The transformation of quinia into the brown flocculent substance, which for the sake of brevity may be termed quiniretin, is due to sunlight exclusively. If water is boiled in order to deprive it of air as much as possible, and then saturated with quinia, the cooled filtered solution keeps perfectly colorless until it is exposed to sunlight, when it soon begins to turn yellowish. It is true, however, that in a closed tube, in the dark, the aqueous solution, if quinia, turns red, yet not brown, as soon as it is heated to 170°C.; at 300° it affords an intensely red liquid. The effect of sunlight is the same if the solution of quinia is deprived of air by a current of hydrogen and the tube immediately closed; the solution thus absolutely deprived of oxygen becomes brown in sunlight.

The brown substance, which I call quiniretin, must therefore continue to have the same composition as quinia, but it is modified in an extremely remarkable way; it is neither quinia or quinicia, nor does it contain a trace of either. Quiniretin is devoid of an alkaline reaction, insoluble in both alcohol and ether as well as in hot or cold water, softening but a little in boiling water. It is not fusible, but melts only far above the melting point of quinia, yet quiniretin then undergoes a thorough decomposition.

Quiniretin is dissolved by acids, but unable to neutralize them or to combine with them. It is abundantly soluble in hydrochloric acid 1·11 sp. gr.; this solution displays an intensely brown color, and may be diluted with water without becoming turbid. Its very bitter taste reminds of that of quinia, but it is at the same time somewhat, I may say, aromatic. The hydrochloric solution of quiniretin is not precipitated by tannic acid; this is likewise in favor of the statement that it is not an alkaloid. The solution is precipitated, on the other hand, as

soon as it is neutralized by ammonia, yet quiniretin is not dissolved by an excess of the latter, and in this respect, too, it differs from quinicia.

It must be granted that the iodohydrargyrate of potassium (1·35 per cent. chloride of mercury, 5 iodide of potassium, 100 water) yields an abundant precipitate in the hydrochloric solution of quiniretin, but the same may be said with regard to other salts, for instance chloride of ammonium or sodium.

A small quantity of dilute sulphuric acid (1·112 sp. gr.) gently warmed and shaken for a day or two with a large excess of quiniretin, affords always an acid liquid of a yellowish hue, far less colored than the hydrochloric solution. The former is not fluorescent, and is decolorized by chlorine water. On addition of ammonia the latter assumes a dingy green hue or yields a greenish precipitate; these reactions succeed better if quiniretin is immediately dissolved in chlorine water (it will usually contain an appropriate amount of hydrochloric acid) and ammonia added to it. This behavior agrees with that of quinia, quinicia and quinidia (conquinia), yet quiniretin again differs from these three alkaloids, inasmuch as it does not afford that red tar (Grahe's test) which makes its appearance if barks containing quinia or the allied alkaloids, or certain salts of them, are heated in a glass tube.

Quiniretin, consequently, differs very widely in many respects from quinia, its mother substance, the composition of which quiniretin must necessarily share with regard to the conditions of its formation, as pointed out above. I may add that I have restricted myself to ascertaining the presence of nitrogen as a constituent of quiniretin. The intense action of sunlight, especially in summer, causes the quinia to be transformed. The alteration is not precisely more favored by acids; the aqueous and also the alcoholic solution of pure quinia is more rapidly transformed; dry quinia requires more time. The other alkaloids of cinchona are much less affected by sunlight than quinia, at least in aqueous solution. This, no doubt, depends upon their sparing solubility, quinia being more readily dissolved by water. It is interesting to see how little kinic acid is altered by sunlight; saturated or diluted aqueous solution of it was but almost imperceptibly affected after a summer's stay in sunshine. As to quinovin, I noticed the absolute absence of any coloration after a similar treatment.

Aqueous solution of morphia is very slightly colored by sunlight,

solution of codeia very much; solution of strychnia is scarcely altered, that of brucia turns brown. It is evident that the amount of solubility is of prominent importance in these experiments, codeia as well as brucia being much more abundantly soluble than morphia or strychnia. Further experiments relating to these remarkable effects of sunshine should be simultaneously instituted by means of other solvents than water.

I thought my few observations worthy of notice, inasmuch as they refer to quinia itself, other chemists having examined its salts. It would appear that the absence of acids prevents the formation of quinicia.—*Pharm. Journ. and Trans.*, May 11th.

THE MINERAL SPRINGS OF TURKEY.

By X. Landerer.

These springs may be arranged, according to their chief constituents, as follows: *Sulphur* springs (theiothermæ), *Chalybeate* springs, *Alkaline* springs, *Carbonic Acid* springs.

SULPHUR SPRINGS.—*Tchesme* (now Kallede).—The peninsula was called by the ancients Myonesus, from the large number of mice found there. In the neighborhood are found the ruins of Erythrea. The springs were known to the ancients (see Pausanias) and seem to have been in great repute, to judge from the magnificent remains of buildings in the immediate environs.

The temperature of the water averages 145°F. (50°R.), and some of the springs reach 158°F. (60°R.) They are very efficacious in skin diseases, rheumatic affections and scrofulous diseases.

Nissyros (formerly Porphyris).—It is a small island only a few miles in diameter, and with about 3,000 inhabitants. In the centre of the island is found a large cavity containing a large quantity of sulphur, and here is found the spring called by the inhabitants bromoneri (stinking water). From most of the fissures escape vapors of sulphuretted hydrogen of quite a high temperature. In one place a house is built over such a fissure for the use of persons who wish to take a sulphuretted steam bath; this is called Pyria.

Adramiti.—Although strongly sulphuretted, no facilities exist, and the patients are obliged to dig holes in the neighborhood, conduct the water there, and bathe in this way. These waters are said to be very efficacious taken internally in consumption and in asthma.

Lemnos has from old times been considered as the abode of Vulcan, and is now nearly uninhabited, owing to repeated eruptions of lava. There exist two springs, one chalybeate and the other sulphuretted.

Smokobo has been renowned from the earliest times. There exist two basins, one of which is reserved for the use of animals.

Salonica.—These springs are the most renowned in Macedonia, and the town was by the ancients therefore called Thermæ, and the Bay of Salonica, Sinus thermaicus. The water is considered very efficacious, not only in rheumatic affections and skin diseases, but also in metallic poisonings and syphilis. The mud might be used with advantage.

Nicomedia.—The town of Isnimid is situated not far from the Bay of Nicomedia (formerly Sinus astacenus) and some twenty miles northwest of Broussa. The springs, called Yalova, are next to those of Broussa, most in repute with the inhabitants of Constantinople.

Kioussesi.—The mud deposited in these springs, and called theiothermine, is used as poultices in ulcers and other skin diseases.

Erzerum.—About 12 hours' travel from Erzerum, near the village of Hassan-Kale, are found the springs, which are surrounded with splendid buildings.

Springs of Syria and Mesopotamia.—In that part of Syria which comprises the Libanon and Antilibanon several springs are found of different composition, and near Aleppo are found sulphur waters.

In Antiochia (now Antakia) are found magnificent ruins of colossal aqueducts, which conducted the water of mineral springs found in the vicinity.

CHALYBEATE SPRINGS.—*Troy* (now Eski Stambul).—This water has a ferruginous, very saltish, taste, and is much used in chlorosis and chronic hemorrhages. The springs are called Lidjia hamam.

Icaria.—Three springs are found on this island, which anciently was called Dolicho, and, from the great number of fishes found there, also Ichthyoessa. One of these springs has a temperature of 127°F. (42°R.), and is found near the village Agios Kyrillos; the other near the cloister Panayia Evangyelistra. The third spring is sulphuretted.

Angora.—In Galathea of old (now Angora) two kinds of mineral springs are found. The ones are cold and ferruginous, the others hot and sulphuretted. The chief chalybeate springs are found at Kidje hamam and Schah hamam and have got a wide reputation in dropsical cases.

Chos.—This island, the birthplace of Hippocrates, formerly called Merope, now Stanchio, possesses four springs. One called Kokkino neron (red water) or Xono neron (acidulated water) is found near Burina, and is said to be very good in enlargement of the spleen. Not far from this one are found some sulphur springs, which are intermittent. Near Saint Marim is found a saline spring, which is said to be the original Hippocratic spring.

Pergamos.—This town, the birth-place of Galenus and Oribasus, is situated near several small springs, which, however, are not much visited, since the tanners use the waters for softening the hides.

ALKALINE SPRINGS.—*Saint Catherine in Macedonia.*—Between Salonica and Volo, near the base of the Olympus, are found several springs of bitter water, with a temperature of 118°F. (38°R.) The water is very useful in disorders of the liver, spleen and intestines.

Candia.—Near the village of Rethimo is found the only important spring, which

may be classed as a weak soda water. It is used in gravel, stone in the bladder and other maladies of the uro-poetic system.

Bathy belongs to the class of bitter waters, and is used by the inhabitants as a spring medicine. Bathy is situated on the Bay of Adramite, not far from Kidonia.

Boli.—Near the base of Ala Dagh, in Bithynia, is found one of the most remarkable caves, with beautiful stalactites. Not far from this cave, near the ruins of ancient Acherusia, are found several springs of great repute in the neighborhood. Some sulphur springs are found near Gerede (Ptolomy's Cratia).

Enos.—In the vicinity are found several small springs, the water of which has a very bitter, saltish taste, and a considerable amount of carbonic acid gas. It is very useful in maladies of the liver and spleen, sequences of the malarial fevers which are so frequent throughout the Orient. In the environs are found ruins of a palace of the emperor Trajan.

Kainurio.—Not far from Pharsalus (Macedonia) exists a spring of bitter water, which is considered efficacious in scrofula. A second spring (saline) is found in the vicinity of Kephalo. A third is found near Milies, and called by the inhabitants kala nera (good water). All these springs contain chloride of sodium and sulphate of magnesium.

Lebedos or Lidjia.—About six or seven hours' travel from Smyrna are found the ruins of Lebedos (Lebethos of Pliny and Strabo), now called Elidja. Here are found some springs of bitter water, with a temperature of 95°F. (28°R.)

Tenedos (formerly Leucophrys) has a sprirg, the temperature of which is 86°F. (24°R.) The water is used chiefly as spring medicine.

Astyra or Kirk Gheuz (that is forty eyes), the water issuing from about forty aperatures. The temperture varies, from time to time, from 100°F. (30°R.) to 167°F. (60°R.)

Arimathea.—Near Jerusalem, in the place called Atzeldamah (Blood acre), purchased with the thirty silver pieces which Judas Iscarioth threw away, is a spring of a very saltish and bitter taste which is renowned over all Palestine for its vermifuge properties.

CARBONIC ACID SPRINGS.—*Lesba* (in Bulgaria) possesses a spring of very cold water containing an abundance of carbonic acid gas. Waters like this are very rare in the Orient and not surpassed by any in the rest of Europe. It is reputed efficacious in pulmonary consumption and other affections of the chest.

Ephesus.—Near the ancient town of Ephesus is situated the village Aya Suluk, which possesses a spring called formerly Alethaia.—From *Gazette Médicale d'Orient*, September, 1877. H. M. W.

VARIETIES.

Tayuya as a Remedy for Syphilis.—Tayuya, a plant from Brazil,[1] has been highly recommended during the past few years as a remedy for syphilis and scrofula. It has been used chiefly by the Italian surgeons. All parts of the plant are used,

[1] Said to be Bryonia Tayuya, *nat. ord.* Cucurbitaceæ.—EDITOR.

but the most efficacious in syphilis is the root, either as a watery infusion or a tincture made by adding 1,000 grams of 80 per cent. alcohol to 339 grams of the powdered root. The strong tincture thus obtained is to be diluted by the addition to it of 1,000 grams of rectified spirits. Of this, 14 drops is the maximum dose for an adult.

Ambrosoli, who has used it freely in the Maggiore and Sifilocomio hospitals of Milan, reports favorably on its use in syphilis, and states that the skin affections, ulcerations and swellings of the glands are promptly relieved by it. Veladini reports "brilliant results," as do also Magri, Strambio, Bazzoni and others. Gamba, however, in the Syphilitic Hospital for Women in Turin, has not had such satisfactory results. Ziessl, of Vienna, states that he has seen no injurious results from tayuya, and, after giving it a fair trial, he greatly prefers it to mercury in the early stages of syphilis. He is not yet prepared to express a positive opinion as to its value in the later stages of the disease.—*Virginia Medical Monthly*, April, from *Allg. Wien. Med. Zeitung*, No. 3, 1878.

Antidote to Phosphorus.—Hager recommends old oil of turpentine for this purpose, and states that the rectified oil is entirely unreliable as such.—*Phar. Centralh.*, March 28, 1878, p. 120.

Pitcherine—A New Stimulant.—The *British Medical Journal* has a long account of a new stimulant, which has been lately described by the papers of Australia. It is called by the natives pitcherine, and is used as we use tobacco, for both smoking and chewing. The effect is that of pleasant exhilaration; when long continued, intense and continuous excitement follows. It is used, when on long foot-journeys, to invigorate and keep up the strength or excite them to courage in battle; large doses are said to infuriate all the passions. Some of the natives make a plaster of this plant and place it back of the ears, believing they are influenced by it.—*Virg. Med. Monthly*, April.

Plastilina is a permanently plastic mass, which has been recently introduced for the use of artists. F. Giesel has analyzed it, and gives the following formula for its preparation: 300 grams oleic acid and 43 of zinc oxide are heated together until combined; this zinc salt is fused together with 60 grams of wax and 130 of olive oil, and the fused mass intimately mixed with 250 grams of sulphur and 118 grams of clay, both in the form of impalpable powder.—*Ber. Deutsch. Chem. Ges.*, 1878, p. 310.

Plating Iron with Platinum. By I. H. Johnson.—The iron is first coated with lead and copper, by applying with a fine brush a paste made by mixing 22 parts of borate of lead and 4½ parts of oxide of copper with a little oil of turpentine. The iron is then heated and immersed in the solution of platinum; after which it is allowed to dry, and then baked at a moderature temperature. The solution of pla-

tinum used is made as follows: 10 lbs. of platinum are transformed into chloride of platinum, which is mixed with 5 lbs. of ether; the latter is then allowed to evaporate spontaneously. A paste is then made of the residue with a mixture of 20 lbs. of borate of lead, 11 lbs. of red lead and a little oil of lavender; then 50 lbs. of amylic alcohol are added.—*Pharm. Centralh.*, March 28, 1878, p. 118.

For Falling Out of Hair.—Erasmus Wilson recommends a lotion composed as follows:

℞ Liq. Ammon. fort, ...
Ol. Amygd, ...
Chloroformi, ... aa ℥i
Spts. Vini *vel.*, spts. rosemar, . . . ℥v
Ol. Limonos q. s. to flavor.

Mix. This should be rubbed on the scalp after thorough friction with the hair brush. There are cases in which it should be used with caution, or largely diluted. —*Ohio Med. Recorder*, April.

Tully's Powder.—

℞ Morphiæ sulph., ... gr. .
Camphoræ, ...
Cretæ preparatæ, ...
Sacch. alb., ... aa gr. xx. M.

Used sometimes as a substitute for Dover's Powder.—*Ibid.*

Bichromate of Potash in Syphilis.—In the "Annales de Ciencias Medicas," for April, Dr. Carlos Vincente Charpantier gives a series of cases illustrating the value of bichromate of potash in secondary and tertiary lesions. Though not altogether new, this treatment is not much known, and yet, from these observations, well deserves to be. The dose is one-fourth of a grain, doubled every three or four days to two or three grains. During the treatment all alkaline substances are prohibited, as liable to neutralize the chromic acid, which is the active agent. From some experiments on himself, Dr. C. finds the bichromate to lower both pulse and temperature in a marked degree.—*Med. and Surg. Rep.*, June 1.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The twenty-sixth annual meeting of the American Pharmaceutical Association will be held in the city of Atlanta, Georgia, on the first Tuesday, the third day of September, 1878, commencing at three o'clock, P. M.

Mr. J. W. Rankin, of Atlanta, the Local Secretary, will be glad to receive articles for exhibition and make arrangements for their display. There will doubtless be a large gathering of Southern pharmacists on this occasion and from among them a considerable accession to our ranks; many new members are also expected to join us from the more Northern States.

The twenty-sixth meeting is likely to be one of more than ordinary interest. In addition to the usual reports it is expected that the Committee on the Revision of the Pharmacopœia will have a very important and interesting one to present; much valuable information may also be expected in the replies to queries, and in the volunteer papers. The city of Atlanta has many attractions and is beautifully and healthfully situated amidst charming scenery. Our Southern friends are expecting a large attendance, and will be glad to welcome to their beautiful city all who can come. Let there be a grand rally of Northern pharmacists.

WM. SAUNDERS, *President.*

London, Ontario, Canada, June 17th, 1878.

MINUTES OF THE COLLEGE.

PHILADELPHIA, June 24th, 1878.

A stated meeting of the Philadelphia College of Pharmacy was held this day at the College hall. Charles Bullock, Vice President, in the chair. Fifteen members in attendance.

The minutes of the Annual Meeting in March last were read, and on motion approved.

The minutes of the Board of Trustees during April, May and June were also read, and on motion adopted. The minutes of the Board for December, 1877, show the election to honorary membership of Messrs. Joseph Bosisto of Victoria, Australia, and Professor Alfonso Herrera of Mexico; and as corresponding members Messrs. L. Créteur and Achille Jonas, both of Brussels, Belgium.

A report of the committee, appointed at the annual meeting to consider the propriety of changing the mode of electing the Board of Trustees, was read by Mr. Wiegand. It was on motion adopted, but considerable discussion arising upon another subject pertinent to the duties of the committee, the report was referred to them for further consideration.

The following gentlemen were elected delegates to represent this College at the Annual Meeting of the American Pharmaceutical Association, which will convene at Atlanta, Georgia, on Tuesday, September 3d, 1878, viz.: Alonzo Robbins, Prof. J. P. Remington, Charles Bullock, J. L. Patterson and Dr. F. M. Murray.

An election for delegates to represent the College in the Convention of Teaching Pharmaceutical Colleges, which will meet at the same time and place, resulted in the choice of the following gentlemen, viz.: Prof. John M. Maisch, Prof. J. P. Remington and Charles Bullock.

Then, on motion, adjourned.

WILLIAM J. JENKS, *Secretary.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

American Pharmaceutical Association.—The time is drawing near for the twenty-sixth annual meeting, which, as our readers know, will be the first one held in the State of Georgia, and will doubtless be attended by many pharmacists and druggists from the Southern States. A considerable attendance is likewise expected from the more Northern States, since aside from the attractions of the meeting, the locality selected will induce many to embrace the opportunity for paying a visit to one of the fairest portions of the South, which is reached by passing through a section of country full of interest and scenic beauty. It is contemplated to organize an excursion party, and we may now state that the route will be at a considerable distance from those districts which may be considered as being under malarial influence throughout a portion of the warm season. The details will be communicated to the members in due season; in the meantime the secretary would invite those who contemplate to be present to inform him of their intentions.

In order to make the necessary preparations for the exhibition of pharmaceutical novelties and objects of interest to pharmacists, it is very desirable that the local secretary, Mr. J. W. Rankin, be informed without delay of the space desired.

We are pleased to give publicity to the following report of the Committee on Prize Essays, awarding the Ebert prize to Mr. Fr. B. Power, for his valuable investigation on resin of podophyllum:

To the President of the American Pharmaceutical Association:

The Committee on Prize Essays would respectfully report, that having carefully examined all the original essays presented at the Twenty-fifth Annual Meeting of the American Pharmaceutical Association, they have unanimously, and independently of each other, decided to award the "Ebert Prize," for the year 1877, to Mr. Frederick B. Power, for his essay, "On the Resin of the Rhizome of Podophyllum peltatum, Linn."

The considerations that prompted the committee to make the award to Mr. Power were:

1. The evidently scrupulous care in the identification of the drug and in the execution of the experiments which the author conceived to be necessary, thereby insuring a series of results that will stand conclusive for the sample of podophyllum rhizome experimented with.

2. The results, which are confirmatory in some directions and contradictory in others, contribute materially to our knowledge of the constituents of the podophyllum rhizome, and, if not conclusive, are calculated to incite renewed investigation, particularly as regards the hitherto undisputed presence of berberia in the drug

The committee do not consider it expedient to subject the essay to a nearer criticism. The results obtained by Mr. Power may be disputed or confirmed by future experimenters; but they have, beyond a doubt, rendered the existence of berberia as a constituent of the rhizome of Podophyllum peltatum questionable, and clearly prove its absence in the particular sample examined by Mr. Power.

A strict interpretation of the "by-law" governing the action of this committee prevents direct reference to other meritorious essays that were selected by the committee for special consideration.

C. LEWIS DIEHL,
J. F. JUDGE.
E. SCHEFFER.

Cincinnati, June 19th, 1878.

Association of the Alumni Massachusetts College of Pharmacy.—At the meeting, June 6th, the Syrups of the Pharmacopœia were the subjects of discussion, several members, at the request of Mr. S. A. D. Sheppard, having experimented and presented the results of their observations. Mr. Sheppard detailed an interesting account of his experience with *Syrup*, and gave his opinion that cold percolation or agitation were to be preferred to heat, and that fifteen (15) parts by weight of sugar to 8 parts by weight of water gave a syrup leaving nothing to be desired.

Mr. Thomas Doliber approved the plan of cold agitation, stating that it had been the custom of the firm which he represented to prepare 30 gallons at a time by this process. He advised a final filtration through paper as an improvement over ordinary straining. Mr. Sheppard read extracts from a letter written to the Pharmacopœia Committee of the American Pharmaceutical Association, by Mr. Edwin Baker, Esq, Shelbourne Falls, Mass., suggesting a process combining agitation, maceration and percolation, for which the writer claimed good results. President Flanagan exhibited aromatic and simple syrups of rhubarb prepared with water as a menstruum.

Mr. Lowd showed samples of Syrup of Iodide of Iron, and read a formula said to be satisfactory.

Iodine,	. . .	10 parts (by weight)
Iron wire cut in pieces,	. . .	3 " "
Water,	. . .	4 " "

Mix in a flask and shake until the reaction of the Iodine and Iron is complete. Add to syrup boiling, 100 parts; shake, and when cold, add syrup to make 130 parts.

Mr. Sheppard presented a formula for syrup of ipecacuanha, by precipitating the resinous matter from the fluid extract by hot water. The precipitate was less in weight by hot water than by cold, and the syrup was much brighter in appearance. He also showed samples of syrup of ipecacuanha, made by precipitating the resin by a mixture of water, acetic acid and glycerin, and stated that his experiments on this syrup were not complete. If this syrup is to be made from the fluid extract, our chief attention should be turned to fluid extract to be made efficient and be miscible with simple syrup.

Mr. Goff exhibited compound syrup of sarsaparilla made in accordance to U. S. P. process, with the exception of pale rose, which he was unable to obtain in the Boston market. Mr. Doliber corroborated this statement, and Mr. Davidson suggested white rose as a substitute for the pale, it possessing a fine aroma and slight laxative tendency.

Mr. Edward S. Kelley read a formula for a permanent syrup of Phosphate of Iron, Quinia and Strychnia.

The Pennsylvania Pharmaceutical Association held an adjourned meeting in American Hall, at Reading, on June 11th. President Heinitsh opened the session, giving a brief account of the organization and the aims of the association. Hon. Chas. F. Evans, Mayor of Reading, extended a hearty welcome to the members, which was responded to by the president. After roll-call and the reading and approval of the minutes, the Executive Committee reported the names of many applicants for membership, who were duly elected. A question arose as to the time for which the officers were elected at Harrisburg in February; a motion was made and carried requesting the officers to serve until the election of their successors at the next annual meeting.

The Secretary reported that steps had been taken to procure a charter, and that the necessary application would soon be made. The members residing at Harrisburg were empowered to make the application. The poison bill passed at the last

session of the Legislature was read and discussed, and reference was made to the bill attempting to regulate the practice of pharmacy (see pages 362 and 363). A very interesting paper on a drug press, constructed by Mr. Chas. T. George, of Harrisburg, was read, and samples of cold-pressed linseed oil, of excellent quality, obtained therewith, to the amount of 19 per cent, were shown. We expect to publish a full description of this press in our next number.

Mr. George exhibited also a specimen of citrate of iron and cinchonidia, prepared by him, and which is beginning to be used to some extent.

At the second session, held in the afternoon, it was decided that twelve members constitute a quorum of the association; and the Secretary was instructed to procure a blank book, to be used as a register, and to have a suitable number of the constitution, by-laws and roll of members printed. The following gentlemen were elected *honorary members* of the association: Dr. E. R. Squibb, Brooklyn, N. Y.; William Saunders, London, Ont; Chas. A. Tufts, Dover, N. H., and Prof. Rob. Bridges, M.D., Philadelphia.

An election of five delegates to the meeting of the American Pharmaceutical Association, resulted as follows: Messrs. Lemberger of Lebanon, Kennedy of Pottsville, Stein of Reading, George of Harrisburg and Ross of Lebanon.

Mr. Burns of Minersville, from the Committee on the Next Annual Meeting, reported that it be held at the city of Pittsburg on the second Tuesday of June, 1879. The report was unanimously adopted.

A committee of three, consisting of Messrs. Remington, Maisch and Patterson, of Philadelphia, was appointed to obtain some designs for a certificate of membership, ascertain the cost and report at the next annual meeting; also a committee on papers and queries, consisting of Messrs. George, Kennedy and Heinitsh.

The subject of the State tax on the sale of patent medicines was brought up and discussed. It appears that the tax is not collected in some counties, and in others very unequitably levied, general dealers selling patent medicines being usually not taxed, although liable under the law, the same as apothecaries and druggists. The whole subject was finally referred to the Committee on Legislation, with the instruction to examine into the matter, to memorialize the Legislature for the repeal of the law, and to prepare blank petitions for signature, to be sent to members of the association and others interested.

New members were elected, and votes of thanks were passed to the druggists, the citizens and the press of Reading for the many courtesies extended. Dr. Ziegler responded on behalf of the druggists and apothecaries of Reading, and stated that they had formed an organization some years ago, but had concluded not to hold meetings at regular intervals; the members were called together whenever a subject of sufficient importance made it desirable.

Prof. Maisch exhibited and briefly described a number of new and rare drugs, and after some remarks by various members the Association adjourned, and the visiting members returned to their homes by the evening trains.

The attendance at the meeting was quite satisfactory, between forty and fifty members having been present. The total membership, we learn from the Secretary, is 66, of which but a very small number are residents of Philadelphia. Many phar-

macists and druggists residing in different parts of the State have corresponded with the Secretary, Dr. J. A. Miller of Harrisburg, and with the chairman of the Executive Committee, Mr. Chas. H. Cressler of Chambersburg. These and all others entitled to membership are invited to connect themselves now with the Association, under the following clause of the By-Laws (Chap. I, Art. 5):

"The Executive Committee shall take into consideration and report without delay on all matters of business and on all propositions of membership, and audit all bills against the Association; and, *in the interim, they, with the President, shall have the power to elect applicants for membership.*"

Augusta Pharmaceutical Association.—We have received the Constitution and By-Laws of this Association, which was organized May 11th, 1878.

St. Louis College of Pharmacy.—The Annual Meeting was held on Monday, May 27th. An election of officers, trustees and a board of pharmacy for the city of St. Louis took place, with the following result: President, Theodore Kalb; Vice President, Chas. Gietner; Secretary, E. P. Walsh; Treasurer, F. W. Sennewald; Board of Trustees—H. E. Hoelke, W. H. Crawford, M. W. Alexander, Geo. Ude and F. X. Crawley; Board of Pharmacy—Theo. Kalb, F. X. Crawley, Chas. Habicht, M. W. Alexander and I. M. Good. Votes of thanks were tendered to Dr. Chas. A. Lips, the retiring Treasurer, who, for the last twelve years, had served the College in this capacity, his annual report showing the College to be in a prosperous condition. The Board of Trustees, at a subsequent meeting, organized itself by electing M. W. Alexander chairman and Chas. Gietner Sec'y.

Pharmaceutical Society of Ireland.—At a special meeting of the Council, held at the College of Physicians, Dublin, on Wednesday, May 8th, Prof. Tichborne, Ph.D., F.C.S., was elected, unanimously, President, in place of Sir Dominick Corrigan, Bart., resigned. Dr. A. Smith, Vice-President, declined to accept the post of President, and requested the Council to allow him to remain as Vice-President of the Society. Mr Bennett, of Kingstown, and Mr. Brunker, of Dublin, were elected to fill the two vacancies on the Council.

Pharmaceutical Society of Paris.—Mr. Méhu presided at the meeting held May 8. Mr. Stan. Martin presented a specimen of *Sapindus* with stinging hairs, which grows on the Senegal, and the fruit of which is employed there by the natives as a depurative. A note by Mr Dufresne was read, in which he described certain falsifications of *pancreatin* and his observations of its digestive power.

Mr. Méhu directed attention to the presence of small quantities of copper in some commercial samples of *boric acid*; he had also met with a boro-tartrate of potassium having a greenish color, which, however, was not due to copper.

Mr. Coulier made an interesting communication on the drugs which are used by the Persians for *dyeing the hair*; he presented to the Society specimens of the plants from which the materials are obtained, and which proved to be the *henna* (Lawsonia alba, *Lam.*) and the *silvery indigo plant* (Indigofera argentea, *Lin.*)

EDITORIAL DEPARTMENT.

Acetic Acid Pure.—A correspondent has directed our attention to the identity of the article on page 293 of our June number, with one published years ago by a manufacturing house of New York, and on comparing the two we have found them to agree with each other, *verbatim et literatim*, with very few and entirely unimportant verbal changes. The pamphlet containing the article referred to was published in the year 1870, by Messrs. E. J. Mallett, Jr., & Co., 72 William St., N. Y.

Pharmaceutical Legislation in Pennsylvania.—We have received from our friend G. W. Kennedy a copy of the bill which was introduced at Harrisburg early in February by Hon. Mr. Ringgold, and to which we alluded in our last number. Mr. Kennedy has accompanied the "dead innocent" by some comments, from which we take the following:

"The bill was at last found in possession of the Committee on Vice and Immorality, the very last place we expected to find it, and had it not been for my friend, an associated press reporter, I would have given it up as lost. Its reference to this committee put it into the place where it properly belonged, and was very properly 'killed' by being indefinitely postponed.

"On glancing over the bill it is readily observed that it is not what the educated pharmacists of the State desire. There is no question but it was framed and worded for the interest and benefit of those who have been engaged in this dishonest and disreputable practice of selling diplomas. If the bill was intended for the good of the people, and for protecting them from unreliable and dishonest druggists in the compounding and dispensing of their medicines, why was it not brought before a body of pharmacists for their sanction or approval?

"No, this would not suit the framers of the bill, as they knew that it never would have been presented in the shape in which it was; at least, there would have been some provision made as to the standing of the institutions issuing the diplomas. You will observe by reference to Section I that it simply requires, in order to be proprietor or manager of a store, to be the possessor of a diploma from some medical college or college of pharmacy, stating that he has studied pharmacy. What a flimsy, transparent section this is! They would also have liked to abolish the Board of Examiners of the city of Philadelphia, which has done so much good for the community in preventing incompetent persons from commencing the drug and apothecary business.

"But the managers of the bill were foiled in their attempt to push this obnoxious bill through, thanks be to our Senators and members of the House. So long as we have such men to legislate for us as Senator Keefer and Representative Potts, from Schuylkill county, and others, there need be no apprehension that such a ridiculous bill may become a law; for, in order to vote intelligently, they make it their business to examine into the merits critically before voting." G. W. K.

AN ACT

To regulate the Practice of Pharmacy and Sale of Poisons, and to Prevent the Adulteration of Drugs and Medicinal Preparations in the State of Pennsylvania.

WHEREAS, The safety of the public is endangered by want of care in the sale of poisons, whether to be used as such for legitimate purposes or employed as medicine and dispensed on physicians' prescriptions;

AND WHEREAS, The power of physicians to overcome disease depends greatly on their ability to obtain good and unadulterated drugs and skillfully prepared medicines;

AND WHEREAS, The act to prohibit the sale of academic degrees, approved May 19th, 1871, does away with the necessity of irresponsible pharmaceutical examining boards;

AND WHEREAS, The class of persons to which the preparation and sale of drugs, medicines and poisons properly belong, known as chemists, druggists, should possess a practical knowledge of the science of pharmacy in its various business relations; therefore

SECTION I. *Be it enacted etc.*, That after May 1st, 1879, no person whomsoever shall be allowed to establish or carry on within the limits of the State of Pennsylvania any retail chemical, drug, apothecary or pharmaceutical store, as proprietor or manager thereof, unless he shall have obtained from a medical college or college of pharmacy a diploma stating that he has studied pharmacy.

SEC. II. That any person who has served two years in a store where medicines are compounded or dispensed, and who has attended the lecture courses for one session in a medical college or college of pharmacy, shall be recognized as a qualified assistant, and, under the supervision of a graduate of pharmacy, he shall be permitted to compound or dispense physicians' prescriptions.

SEC. III. That every graduate of pharmacy actually engaged in the practice of his profession shall be registered as such in the office of the Clerk of the Court of Quarter Sessions of the county in which he is located. The fee for each registration shall be one dollar ($1).

SEC. IV. That any person who shall knowingly, willfully or fraudulenty falsify or adulterate, or cause to be falsified or adulterated any drug or medical substance or any preparation authorized or recognized by the Pharmacopœia of the United States, or used or intended to be used in medicinal practice, or shall mix or cause to be mixed with any such drug or medicinal substance any foreign or inert substance whatsoever, for the purpose of destroying or weakening its medicinal powers or effect, and shall willfully, knowingly or fraudulently sell or cause the same to be sold for medicinal purposes, shall be guilty of a misdemeanor, and upon conviction thereof shall pay a penalty not exceeding five hundred dollars ($500), and shall forfeit to the commonwealth all of the article so adulterated.

SEC. V. That "the Act to regulate the Practice of Pharmacy and Sale of Poisons, etc., in the city of Philadelphia, approved April 4th, 1872," be and the same is hereby repealed; and all other acts or parts of acts inconsistent or conflicting witn this act are also hereby repealed.

In addition to what Mr. Kennedy has said about this bill, we wish to call attention to the provision of Section I, requiring all who *carry on* any retail apothecary store to procure a "diploma." There are a large number of apothecaries throughout the State, particularly among the older members of the profession, who would thus have been compelled to hunt for the crooked diploma venders—provided the provision would have stood the test of law in a court of equity.

Other provisions which we especially commend to the consideration of those who desire to know "how *not* to do it," are contained in Sections II and III. Is a person a *qualified assistant* who has to learn yet how to compound even simple prescriptions? And if a person has served as errand boy or in a similar position in a dispensing establishment, and has attended a course of lectures, of which perhaps he has not grasped even the rudiments, will that make him a *qualified* assistant? A *graduate of pharmacy* was to procure registration (Sec. III); but the happy individuals who under Section I would have procured a "diploma stating that they had studied pharmacy," we presume would have been exempt from paying the registration fee, because the bill does not declare them to be graduates, and very likely a crooked diploma fee may have been considered as a sufficient tax.

A Poison Act.—We have received the following copy of a new law, which, though it does not directly affect pharmacists, is nevertheless of interest to them. We print the law, together with some comments from our correspondent:

AN ACT

To prevent the wanton or careless use of poisons.

SECTION I. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same,* That no person shall put or expose in any public place or highway, nor on his own lands outside of his buildings, nor on the lands of any other person, any poison or admixture thereof, with the intent that the same shall be taken or swallowed by any bird, fowl or wild animal.

SECTION II. Any person violating this act shall, on conviction before any alderman or justice of the peace, be subjected to a fine of twenty dollars to the use of the Commonwealth.

"The above is an act passed at the last session of the Legislature of Pennsylvania.

"The *title* of the act is clear enough, and the premises such where *careful* legislation would be desirable. We think, however, that the author of the bill has failed in the present case to cover the ground *judiciously*.

"Leaving it to the naturalist to decide whether the potato beetle is an animal, and if so, a *wild* or domestic animal; we see in the present act no clause which extends protection to dogs, sheep, hogs, etc., which are not *wild* animals, while the question of what is a "wild animal," is left open to the judicial construction of *any alderman or justice of the peace*." B.

Diploma Selling.—We have repeatedly called attention to the fact that diploma venders in North America and Europe are reaping a harvest by selecting high-sounding titles for their imaginary institutions, or such which closely resemble those of well-known institutions of unquestioned respectability. The arrangements for accommodating dupes with all sorts of scientific honors and titles are usually made secretly, and it is not often the case that the agents who, for a valuable consideration, lend their helping hand to the transaction of a business that shuns the light, receive the merited stamp before they have even begun to embark in the new enterprise. It affords us pleasure, therefore, to republish the following letter from the "Cincinnati Eclectic Medical Journal" for April, in the hope that the writer of the letter may reap all the benefit, which his benevolence and kindness deserve:

"BERLIN, 10th of January, 1878.

"*To the Eclectic Medical College, Cincinnati:*

"I herewith take the liberty to inquire if you are inclined to confer the degree of a Doctor in absence on qualified and respectable parties. I could labor for you with the best success, if you would elect me as a delegate for Europe I have acted till now in this capacity for qualified persons for the American University of Philadelphia, American University of New Jersey, and Nova Anglica University, Manchester, New England, but would prefer to work for an university of your well-known reputation. I would endeavor to arrange matters in such a manner that the good name of your university will not suffer, as I will confer the degree of a doctor only to such parties as are entitled by their previous studies. I require diplomas as a Doctor of Medicine and a Doctor of Dental Surgery. Therefore, if the laws of your country allow that you grant the degree of a Doctor in absence, I beg you to inform me at what price you would confer the promotion, that is, how much the fee for each diploma will be.

"With the assurance that the good name of your university will be preserved, and that I will further your interest to the best of my ability, I look for an early reply. I remain, yours, respectfully,

"DR. H RUMLER, M. D., Hollmannstrasse No. 40, Berlin."

The introduction of the metric system into the United States has been very materially furthered by an order, dated April 27, 1878, which, with the approval of the Secretary of the Interior, has been issued by John M. Woodworth, Surgeon-General, United States Marine-Hospital Service. The medical officers of this service will hereafter be required to discard the apothecaries' weights and measures, and to express quantities by weight only in "grammes" and "centigrammes," and quantities by measure in "cubic centimetres."[1] To facilitate compliance with this important order a pamphlet has been published containing rules for converting the old into metric values, suggestions for writing metric prescriptions, a metric posological table, etc., which have been prepared with commendable care, by the Chief Clerk and Acting Medical Purveyor, Prof. Oscar Oldberg, Phar.D. We copy from the rules and explanations the following:

[1] We regret that the Surgeon-General has not sanctioned the simpler orthography adopted by the American Metric Bureau.

1.—TO EXPRESS QUANTITIES BY WEIGHT OF THE APOTHECARIES' SYSTEM IN METRIC TERMS, OR TO WRITE MEDICAL PRESCRIPTIONS IN METRIC WEIGHTS.

RULE A.—*Reduce each quantity to grains; then divide the number by* 10, (or move the decimal point one place to the left,) *and from the quotient subtract one-third.* The remainder is in each case the number of grammes representing (nearly) the same quantity. Or,

RULE B.—*Reduce each quantity to drachms, and multiply the number by* 4. The product is in each case the number of grammes representing (nearly) the same quantity. Or,

RULE C.—*Reduce each quantity to ounces, and multiply the number by* 32. The product is in each case the number of grammes representing (nearly) the same quantity.

One gramme is equal to 15·43234874 troy grains (*Professor Miller*).—In preparing the above rules the fraction has been ignored, as for medical and pharmacal purposes one gramme and 15 troy grains may be safely considered as equal quantities. In rule A, therefore, a division of 15 may, if preferred, be substituted for the division by 10, followed by a subtraction of one-third from the quotient, with the same result. The difference between 15 and 15·43234874 is 2·882+ per cent., and hence the deviation from exactness in the answer arrived at by either of the above rules corresponds to an excess of 28·82+ grains for every 1,000 grains, or about 14 grains for every ounce.

To insure greater accuracy, if in any case deemed necessary, three per cent. may be deducted from the answer arrived at by either of the Rules A, B and C. The deviation from exactness will then be reduced to one-fifth of one per cent, the remainder being less than the exact equivalent sought by only 2·04 grains for every 1,000 grains, or about one grain for every ounce.

2.—TO EXPRESS QUANTITIES BY MEASURE OF THE APOTHECARIES' SYSTEM IN METRIC TERMS, OR TO WRITE MEDICAL PRESCRIPTIONS IN METRIC CUBIC MEASURES.

RULE D.—*Reduce each quantity to minims; then divide the number by 10.* (or move the decimal point one place to the left), *and from the quotient subtract one-third.* The remainder is in each case the number of cubic centimetres representing (nearly) the same quantity. Or,

RULE E.—*Reduce each quantity to fluid drachms, and multiply the number by 4.* The product is in each case the number of cubic centimetres representing (nearly) the same quantity. Or,

RULE F.—*Reduce each quantity to fluidounces, and multiply the number by 32.* The product is in each case the number of cubic centimetres representing (nearly) the same quantity.

One metre is equal to 39 370432 inches (*Captain Clarke*).—Hence one cubic centimetre is equal to 0.0610253868 — cubic inches, or to 16·2311678 + minims, (there being 61,440 minims in each wine-gallon of 231 cubic inches). In preparing the above rules 1 cubic centimetre and 15 minims have been considered as equal quantities, which, for medical and pharmacal purposes, is deemed sufficiently accurate. In Rule D, therefore, a division by 15 may, if preferred, be substituted for the division by 10, followed by a subtraction of one-third from the quotient, with the same result. The difference between 15 and 16·2311678+ is 8·208 —per cent., and hence the deviation from exactness in the answer arrived at by either of the above rules corresponds to an excess of 82·08—minims for every 1,000 minims, or about 41 minims for every fluidounce.

To insure greater accuracy, if in any case deemed necessary, 8 per cent. may be deducted from the answer arrived at by either of the Rules D, E and F. The deviation from exactness will then be reduced to less than one-half of one per cent., the remainder being less than the exact equivalent sought by only 4·49—minims for every 1,000 minims, or less than 2¼ minims for every fluidounce.

We are pleased that official sanction has been given to this very simple method of familiarizing physicians with the use of the metric system, and thus set at rest the groundless fears of dangerous inaccuracy occurring in consequence of the conversion of old values into their approximate metric equivalents. It will also be observed that for liquids of the spec. grav. of water weights may be substituted for measures, since 1 gram=1 cubic centimeter. It would seem then as if there was but little if any difficulty of abandoning measures altogether in prescriptions in favor of weights, as we have repeatedly taken occasion to advocate. It affords us pleasure to refer to a paper, by Dr. E. Wigglesworth, which was recently published in the "Boston Medical and Surgical Journal," and strongly urges the course indicated. There is a slight inaccuracy in that paper, which, however, does not detract from the value of the argument; the author has overlooked the fact that the apothecaries' grains,

drachms and ounces formerly in use in Prussia, were *not* identical with the corresponding Troy values, but were almost equivalent to our apothecaries' measure, weighed as water. We give place to the concluding remarks of Dr. Wiggleworth's paper:

In our old "systemless system" some fluids were measured. How shall we obtain, with weights, the desired bulks of fluids with varying weights? Must we learn the specific gravities of all fluids? *Not at all!*

1. Fixed oils, honey, liquid acids and chloroform, must at present be prescribed in our old weights, not measures, according to the Pharmacopœia. Here change old weights to metric ones.

2. Not enough chloroform or ether is included in any one prescription to admit of harm arising from the amount contained in a single dose, even were their weights regarded as the same with that of water. Moreover, it is not difficult to remember that ether weighs seven-tenths as much as water, chloroform twice as much as ether.

3. There remain infusions and tinctures, glycerins and syrups. These four are used in bulk as doses, or as solvents or vehicles. The former two may be regarded as identical in weight with water; the latter two as one-third heavier, and when prescribing these we need merely write, by weight, for four-thirds as much as we should write for were we prescribing water, and we obtain an equal bulk. The teaspoon or tablespoon dose will then contain the desired amount of the drugs employed.

Or, simplest of all, we can make any mixture up to any desired bulk by merely directing the druggist to use enough of the vehicle to bring the whole mixture up to the requisite weight for that bulk.

The Metric Bureau, 32 Hawley street, Boston, will furnish metric prescription-blanks to order, to druggists or physicians, at four-fifths printers' rates, or any blank can be made sufficiently metric by a perpendicular line at the right, headed *Grams.*

Old Style.		Metric. *Gms.*
℥ i or gr. i	equals	.06
f℥i " ʒi	"	4
f℥i " ℥i	"	32

The decimal LINE *instead of* POINTS *makes errors impossible.*

A teaspoon is 5 Gms; a tablespoon, 20 Gms.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Medicinal Plants, being descriptions with original figures of the principal plants employed in medicine, and an account of their properties and uses. By Robert Bentley, F.L.S, and Henry Trimen, M.B., F.L.S. Philadelphia: Lindsay & Blakiston. Parts 27 and 28. Price, $2.00 each.

The parts of this excellent work now before us contain Aconitum ferox, *Wall.* (yields bish or bikh root); Acon. heterophyllum, *Wall.* (used in India as a tonic and antiperiodic); Andropogon nardus, *Lin.* (yields oil of citronella); Capsicum fastigiatum, *Blume* (bird-pepper or chillies); Cicuta virosa, *Lin.* (water hemlock); Daucus carota, *Lin.*; Glycyrrhiza glabra, *Lin.*; Liquidambar orientale, *Miller* (yields storax); Matricaria chamomilla, *Lin.*; Melia azadirachta, *Lin.* (the nimor margosa of India); Œnanthe crocata, *Lin.* (water dropwort of Western Europe); Origanum vulgare, *Lin.*; Papaver somniferum, *Lin*, and Piper cubeba, *Lin.*

Die allgemeinsten chemischen Formeln, ihre Entwicklung und Anwendung zur Ableitung chemischer Verbindungen. Von Dr. C. Willgerodt, Docent der Chemie an der Universität zu Freiburg. Heidelberg: Carl Winter's Universitäts-Buchhandlung 1878. 8vo, pp. 208.

Chemical formulas generalized, their evolution and application for the derivation of chemical compounds.

As indicated in the title, this work is not intended for a mere enumeration of the

elementary or empirical formulas of the various chemical compounds. On the contrary, it aims at producing a general mathematical formula for all compounds, from which the rational formula of any compound may be deduced, bearing in mind the different quantivalence of the elements or groups of elements entering into combination. The subject is one of especial interest and importance in theoretical chemistry, and has been treated in a very commendable manner. It is impossible, however, in the brief space allotted to this review to follow the author in his evolution of the generalized formula, and to give the latter without the preceding considerations would be of no avail.

In an appendix, the author has arranged a number of formulas regarding all elements as being of the same chemical value (univalent), but reserves for future consideration to determine the general applicability of such a theory. There is no difficulty in the way of this view as long as the compounds consist of one atom each of two elements; but with a larger number of one or both it is different, and we believe it will be of interest to our readers to learn, from a few examples, the shape which the formulas of some well known compounds would assume. Water, $H_2O = (O'—H')'H'$; oxide of potassium, $K_2O = (O'—K')'K'$; hydrate of sodium $NaHO = (O'—Na')'H'$; ammonia, $NH_3 = [(N'—H')'—H']'H'$; acetylene, $C_2H_2 = (C'—H')'(C'—H')'$, etc.

Proceedings of the Connecticut Pharmaceutical Association at the Second Annual Meeting, held in New Haven, Conn., Feb. 6th, 1878. New Haven. Pp. 43.

The meeting was opened by the President, Nathan Dikeman. The reports of officers and committees were presented and the usual routine business transacted. The draft of a proposed pharmacy act was submitted, discussed and adopted, and a committee appointed to present it to the Legislature and urge its passage. Nine papers on practical subjects and affairs of the Association were read and referred for publication. The following officers were elected to serve for the current year: President, Hugh H. Osgood, Norwich; Vice Presidents, Dwight Phelps, West Winsted, and F. V. Perry, Danbury; Secretary, Romanta Wells, New Haven; Treasurer, George P. Chandler, Hartford.

Eighth Annual Report of the State Board of Pharmacy, made to the General Assembly 1878. Providence, R. I.

During the past year fourteen persons applied for registration as pharmacists, ten of whom passed on the first, three on the second and one on the fourth examination. Of six applicants for registration as assistants three passed on the first and one on the second examination.

Sixth and Seventh Annual Reports of the Alumni Association of the College of Pharmacy of the City of New York, 1877-78. New York. 8vo, pp. 59.

Third Annual Report of the Alumni Association of the St. Louis College of Pharmacy. St. Louis, Mo., 1878. 8vo, pp. 53.

The organizations whose reports are before us have the praiseworthy object to unite the graduates into closer fellowship, and to advance the interests of the institutions where the graduates have received their pharmaceutical honors. Local in character, such associations nevertheless exert a laudable influence in more distant localities by promoting good feeling among its members wherever they may reside, and by renewing through these annual publications the bond of union which naturally centers in the *Alma Mater*. The graduates of the different colleges of pharmacy, whose only object has not been to obtain the coveted degree, attach themselves to an association the ultimate aim of which, obviously, is the promotion of pharmaceutical education and pharmaceutical progress.

Prescription Writing, designed for the use of medical students who have never studied Latin. By Fr. H. Gerrish, M.D., Professor of Materia Medica and Therapeutics in the Medical School of Maine. Second edition. Portland, Me.: Loring, Short & Harmon. 1878. 16mo, pp. 51.

This little work is intended to instruct not in the art of prescribing, but in the proper construction of prescriptions in Latin. With this end in view, it gives some simple rules, and afterwards some classified lists of words used in prescriptions, intended to aid those who are ignorant of Latin to avoid mistakes which are bad enough in written prescriptions, but infinitely worse when printed. We commend the little book to physicians and apothecaries who desire to improve in the correct writing and reading of perscriptions

---

The following pamphlets have been received:

Fluid Extracts by Repercolation. By E. R. Squibb, M.D., Brooklyn, N. Y. Reprinted from the "Am. Jour. Phar.," May, 1878, with additions by the author. Pp. 43.

Studien über die Zusammensetzung des Holzes. Inaugural-Dissertation von Arthur Stackmann. Dorpat, 1878. 8vo, pp. 60.
Researches on the Composition of Wood.

Is Modern Education Exerting an Evil Influence upon the Eyesight of our children? By A. W. Calhoun, M D., Professor, etc., Atlanta Medical College. Pp. 18.

Is Phthisis Pulmonalis Contagious, and does it belong to the Zymotic Group? By W. H. Webb, M.D, Philadelphia. Pp. 38.

A New Treatment of Skin Diseases. By Meigs Case, M.D, Oneonta, N. Y. Pp. 8.

Fifty fifth Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y., for 1877. Pp. 96.

Lithotomy. A tabulated statement of cases with considerations, etc. By David Prince, M.D., Jacksonville, Ill.

Laparo-Elytrotomy, a substitute for the cæsarean section. By T. Gaillard Thomas, M.D., New York. Pp. 25.

The Intro-venous Injection of Milk as a substitute for the Transfusion of Blood. By T. Gaillard Thomas, M.D., New York. Pp. 19.

The Vest-Pocket Anatomist (founded upon Gray). By C. Henri Leonard, A.M., M.D., Detroit 16mo, pp. 60.

Eulogy upon Lunsford P. Yandell, M.D. By Theo. S. Bell, M.D., Louisville, Ky. Pp. 22.

OBITUARY.

Felix Henri Boudet died at Paris April 6th, having nearly completed his 72d year. He was born in the same city May 22d, 1806, became a pharmacist, and in 1833 received the diplomas of Doctor of Sciences and of Pharmacy. In competing for the first one of these degrees, he had instituted researches and wrote a thesis "on the action of hyponitric acid upon the oils," in which he pointed out the difference in its behavior to the drying and non-drying oils. Soon afterwards, he took charge of his father's officine, which he sold in 1849 to Edmond Robiquet, and henceforth devoted all his time to scientific researches. He was a member of the most prominent scientific bodies of France, and in 1852 was appointed to the Conseil d'hygiène et de salubrité of Paris. Of his numerous scientific memoirs many have been noticed in this journal, notably several on strictly pharmaceutical subjects, which were published about 30 years ago.